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Preface

Energy Information Administration (EIA) quarterly forecasts of short-term energy supply, demand, and prices are revised in February, May, August, and November for publication in the Short-Term Energy Outlook, quarterly projections. Methodology volumes, which are published with the May and November issues, contain descriptions of the forecasting system and detailed analyses of the current issues that affect EIA's short-term energy forecasts. The principal users of the Outlook are managers and energy analysts in private industry and government. This quarter's projections extend through 1984.

The forecasts are produced using the Short-Term Integrated Forecasting System (STIFS). Two principal driving variables are used in the STIFS model: the macroeconomic forecast and the world oil price assumptions. The macroeconomic forecasts, which are produced by Data Resources, Inc., (DRI), are adjusted by EIA in cases where EIA projections of the world price of crude oil differ from DRI estimates. EIA's Oil Market Simulation Model is used to project the world oil prices.

The three projections for petroleum supply and demand are based on low, medium, and high economic growth scenarios which incorporate high, medium, and low crude oil price trajectories. In general, the following discussion of the forecast refers to the medium, or base case, scenario. Total petroleum consumption sensitivities, using varying assumptions about the level of price, weather, and economic activity are given in Table 10.

The forecasts are based on EIA data published in the Monthly Energy Review, Petroleum Supply Monthly, and other EIA publications.

The base case projection for petroleum is summarized in Table 1. Tables 4, 5, and 7 through 18 appear at the end of the text.

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1. Highlights

Non-Communist world oil consumption is projected to fall slightly from 1982 to 1983, for the fourth consecutive year-to-year decline. From 1983 to 1984, oil consumption in the Non-Communist world is projected to rise by over 3 percent as the result of resumed economic growth, while oil supplies increase by about 8 percent. Petroleum stocks are projected to rise somewhat, reversing the last 2 years' large withdrawals from stocks.

In view of the recent firmness in the world petroleum market and the outlook for consumption and supplies, petroleum prices are projected to stabilize near current levels. In the base case forecast, the price of imported crude oil to U.S. refineries is assumed to remain at \$29 per barrel through 1984.

The U.S. economic recovery is projected to continue through 1984 at a somewhat slower rate than the rapid growth that occurred from the first to second quarters of 1983. Gross National Product (GNP) is projected to rise by 3.1 percent from 1982 to 1983 and 4.8 percent from 1983 to 1984.

In response to rising GNP and the assumed return of normal weather conditions, total U.S. energy consumption is projected to rise by 5 percent from 1983 to 1984. Total U.S. energy consumption has declined in each year since the record high level reached in 1979.

This base case forecast for this Outlook is as follows:

- Total U.S. petroleum consumption in 1983 is projected to be 15.2 million barrels per day, about the same level as in 1982. This projection reflects the offsetting effects of low consumption during the mild winter weather in 1983 and the resumption of strong economic growth in the spring. As the economic recovery continues into 1984, petroleum consumption is projected to be about 16 million barrels per day, approximately 5 percent above year-earlier levels. (The base case projection for petroleum is summarized in Table 1.)
- As the result of a slight decline in domestic crude oil production over the forecast period, the end of the last 2 years' large withdrawals from primary petroleum inventories, and continued economic growth:
 - Net 1983 oil imports are projected to be approximately equal to the 1982 level of 4.3 million barrels per day. A 28-percent year-to-year rise in net imports, to about 5.5 million barrels per day, is projected for 1984.

- Total 1983 oil imports, measured on a balance-of-payments' basis, are forecast to cost \$55 billion, about 10 percent less than in 1982, primarily because of lower crude oil prices. The total cost of oil imports is projected to rise about 23 percent, to \$68 billion, in 1984.
- From 1982 to 1983, the consumption of each major petroleum product--with the exception of residual fuel oil--is projected to change relatively little. Residual fuel oil consumption is forecast to decline by more than 13 percent. In 1984, the consumption of each major category of petroleum product--with the exception of motor gasoline--is forecast to be above year-earlier levels.
 - Motor gasoline consumption is projected to rise slightly from 1982 to 1983, to 6.6 million barrels per day, and remain at that level in 1984. The demand-stimulating effects of declining retail gasoline prices and a growing economy are expected to essentially offset the demand-decreasing effects of a more-efficient motor vehicle fleet.
 - Distillate fuel oil consumption is projected to decline slightly, to 2.6 million barrels per day, in 1983. Consumption has been depressed by the unusually mild weather during the winter of 1983. The improving economy, significantly lower real retail prices, and assumed return of normal weather are forecast to bring distillate fuel oil consumption above year-earlier levels beginning in the fourth quarter of 1983. A more-than-10-percent increase in distillate fuel oil consumption, to 2.9 million barrels per day, is projected for 1984.
 - Residual fuel oil consumption is projected to average 1.5 million barrels per day in 1983, more than 13 percent below 1982 consumption, and then to return to approximately the 1982 level in 1984.
- Natural gas consumption in 1983 is projected to be 17 trillion cubic feet--about 5 percent lower than in 1982 and the lowest level since 1966. In 1984, as the economy continues to recover and normal weather is assumed to return, natural gas consumption is projected to be almost 7 percent above year-earlier levels. A 7-percent decline in gas production, to 16.3 trillion cubic feet, is projected for 1983, with 1984 production at 17.4 trillion cubic feet, about 7 percent above year-earlier levels. Primarily because of a significant increase in liquefied natural gas imports, total gas imports in 1983 and 1984 are projected to be 0.9 trillion cubic feet, about 5 percent of U.S. natural gas consumption. Due to wellhead price increases allowed under the Natural Gas Policy Act of 1978 (NGPA), the price of natural gas is projected to rise more rapidly over the forecast period than the price of any other form of energy. Gas prices to residential users in 1983 are forecast to average 15 percent above year-earlier levels, and then to rise by over 7 percent from 1983 to 1984.

- Domestic coal consumption is forecast to be essentially unchanged from 1982 to 1983, and then to rise by about 5 percent to 749 million tons, in 1984. Coal exports are projected to drop by 29 percent from 1982 to 1983, primarily because of the weak world economy and additional competition from exports by Poland, Australia, and South Africa. A small recovery in exports is projected for 1984. Because of a sharp decline in exports, significant withdrawals from domestic inventories, and weak growth in domestic consumption, U.S. coal production is forecast to fall by more than 7 percent, to 769 million tons, in 1983. In 1984, all categories of coal consumption, together with exports, are expected to increase, leading to coal production of 813 million tons, almost 6 percent above year-earlier levels.

- Electric power generation is projected to rise by less than 1 percent in 1983, to 2.26 trillion kilowatt-hours, due to low industrial usage and warm weather in the first part of 1983. As a result of the projected healthy growth in the economy, especially in the industrial sector, a 5-percent year-to-year rise in electricity generation, to 2.38 trillion kilowatt-hours, is projected for 1984.
 - Increases from 1982 to 1983 are projected for generation from coal, petroleum, nuclear power, and hydroelectric power while natural gas-fired generation is forecast to decline. Electric utility use of all energy sources, with the exception of hydroelectric power, is projected to increase from 1983 to 1984.
 - Hydroelectric generation in 1983 is expected to set new records as the result of heavy precipitation in the West, and then to return to normal levels in 1984.
 - Nuclear-powered generation is projected to rise by 5 percent from 1982 to 1983 and about 8 percent from 1983 to 1984. The nuclear portion of domestic electricity generation is expected to be over 13 percent, setting new records in 1983 and 1984.

- Total U.S. energy consumption in 1983 is projected to be 70.2 quadrillion Btu, about the same level as in 1982, and then to rise to 73.8 quadrillion Btu in 1984 (see Table 2).
 - The consumption of oil and coal is projected to change relatively little from 1982 to 1983, while nuclear power and hydroelectricity use increases and natural gas use declines significantly.
 - The consumption of each major energy source, with the exception of hydroelectricity, is projected to rise from 1983 to 1984.

Table 2. Gross Energy Consumption by Source
(Quadrillion Btu)

Energy Source	History				Projections	
	1979	1980	1981	1982	1983	1984
Petroleum	37.1	34.2	31.9	30.4	30.3	31.9
Natural Gas	20.7	20.4	19.9	18.3	17.4	18.6
Coal ^a	15.2	15.4	16.0	15.4	15.5	16.4
Nuclear Power	2.7	2.7	3.0	3.1	3.2	3.5
Hydroelectricity ^b	3.1	3.1	3.1	3.6	3.7	3.2
Geothermal and Other	0.1	0.1	0.1	0.1	0.1	0.1
Gross Energy Use ^c	78.9	76.0	74.0	70.9	70.2	73.8

^aIncludes net imports of coal coke.

^bIncludes net imports of electricity plus industrial production of electricity.

^cThe total may not equal the sum of the components shown due to independent rounding.

Source: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(83/08), and Electric Power Monthly, DOE/EIA-0226(83/06).

- The share of total energy consumption accounted for by petroleum is projected to remain at approximately 43 percent from 1982 to 1984, while the coal share rises steadily, to more than 22 percent in 1984. The natural gas share is forecast to fall to about 25 percent in 1983, and then to rise in 1984.
- U.S. energy production is expected to decline by almost 4 percent from 1982 to 1983, and then to increase by about 3 percent from 1983 to 1984. Domestic petroleum production is expected to resume its long-term decline in late 1983. Natural gas production is projected to follow domestic demand down from 1982 to 1983, then rise from 1983 to 1984. Coal production is forecast to fall from 1982 to 1983, primarily because of a weak export market, and then to rise in 1984.
- Net imports of energy are projected to increase as coal exports remain depressed and imports of crude oil and natural gas rise.
- The energy intensity of U.S. economic activity is projected to decline to 45,980 Btu per 1972 dollar of GNP in 1983. With U.S. energy use projected to rise somewhat more rapidly than GNP from 1983 to 1984, a slight rise in the Btu/real GNP ratio is forecast. Much of this year-to-year rise is due to the unusually warm weather early in 1983 that resulted in reduced energy use. A reversal in the long-term trend toward lower energy/GNP ratios is not forecast.

In summary, with an outlook for energy prices that is more stable than in recent years, energy consumption is expected to be influenced primarily by growth in the U.S. economy. The consumption of each major fuel, except for coal and nuclear power, is projected to decline slightly from 1982 to 1983. In the continuing economic recovery that is forecast, the consumption of each energy source (with the exception of hydroelectric power) is projected to rise from 1983 to 1984. The use of nuclear power is forecast to rise as new plants are completed. Natural gas and coal production are projected to increase due to the effects of economic growth on demand. Domestic petroleum production is expected to continue its long-term decline. Net imports of petroleum are projected to increase only slightly from 1982 to 1983. However, in 1984, increasing consumption, lower domestic oil production, and the end of the recent major withdrawals from primary inventories are projected to cause a significant increase in oil imports.

It should be noted that the forecast given above is this Outlook's base case forecast. Additional cases for petroleum, based on alternative economic growth rates and oil prices, are included in the report. Should the imported crude oil prices and economic growth that occur during the forecast period differ from the base case assumptions, it is estimated that:

- o For each 1-percent increase in GNP above the forecast levels, petroleum consumption and total imports in 1984 would increase by 200,000 barrels per day (approximately 1.3 percent and 3.1 percent, respectively).
- o For each \$1-per-barrel (approximately 3.4 percent) decline in the price of imported crude oil, petroleum consumption and total imports in 1984 would increase by 120,000 barrels per day (approximately 0.8 percent and 1.9 percent, respectively).
- o For each 10-percent increase in heating degree-days during the first and fourth quarters, petroleum consumption and total imports would increase by an average of 240,000 barrels per day (approximately 1.5 percent and 4.0 percent, respectively).
- o For each 10-percent increase in cooling degree-days during the second and third quarters, petroleum consumption and total imports would increase by an average of 120,000 barrels per day (approximately 0.7 percent and 1.9 percent, respectively).

Should low economic growth occur from 1983 to 1984, electricity consumption would rise by only 3.7 percent, compared to the 5.3-percent increase projected in the base case.

2. The Outlook

Forecast Assumptions

World Oil Prices

The price of crude oil delivered to U.S. refineries is assumed to stabilize at its estimated early-August-1983 level of about \$29 per barrel in the base case projections. Several factors have been responsible for downward pressure on crude oil prices during the last 2 years: declining energy demand in a generally depressed world economy; inventory drawdowns and resulting lower imports in major consuming countries; and additional oil production, particularly by countries that are not members of the Organization of Petroleum Exporting Countries (OPEC).

In the base case, level nominal crude oil prices through 1984 are assumed because:

- World economic growth is projected to resume during 1983 and 1984 with the result that oil consumption increases from recent levels. The apparent large drawdowns of petroleum inventories in the importing countries during the last 2 years are projected to end during 1983 and further contribute to the demand for oil on the world market.
- Recent attempts at restraining OPEC crude oil production are assumed to succeed to the extent that they prevent a major surge of additional production and a resulting price war. It is, however, expected that crude oil production will be raised sufficiently to stabilize world prices.

In this Outlook, the three alternative forecast cases presented incorporate differing economic growth assumptions in order to provide a significant range of energy consumption projections. The petroleum price assumptions associated with these cases are as follows (see Figure 1):

High Economic Growth	The average price of crude oil to U.S. refiners is assumed to fall to \$25 per barrel at the beginning of 1984, then to remain level for the remainder of the forecast period.
Base Case	Prices are assumed to remain constant at the early-August level of about \$29 per barrel.
Low Economic Growth	Prices are assumed to rise at 2 times the U.S. rate of inflation and to average \$32.24 per barrel in the fourth quarter of 1984.

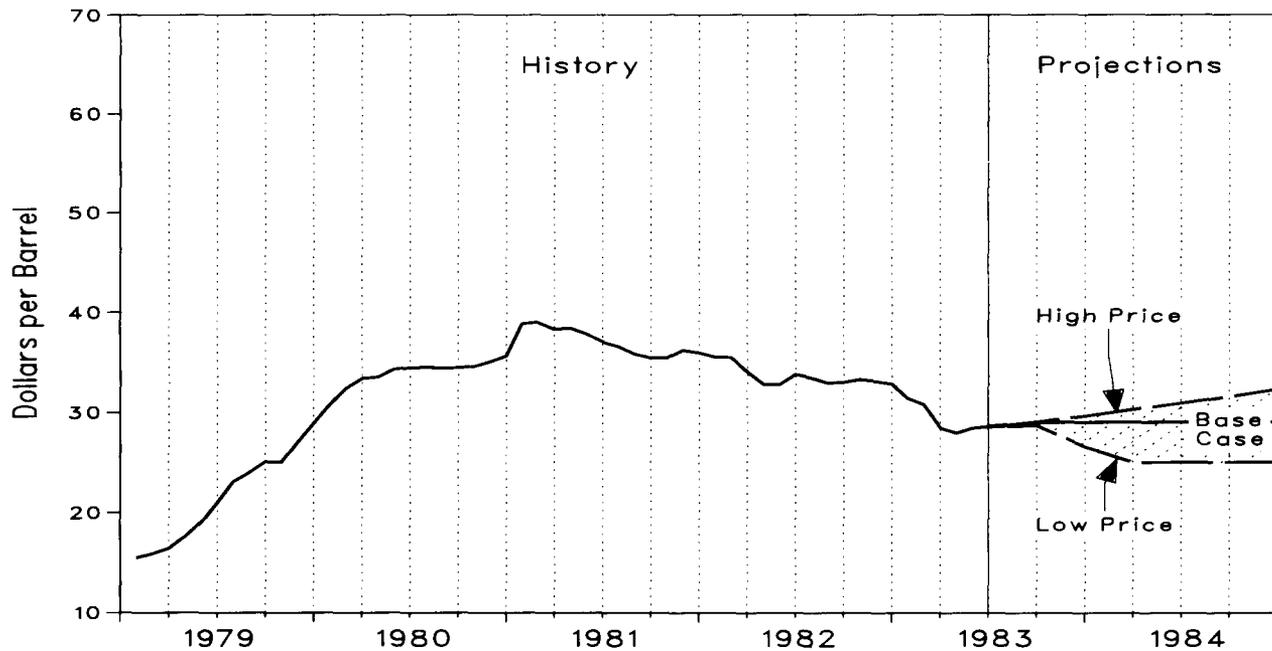


Figure 1. Imported Crude Oil Prices

Macroeconomic Activity

The economic recovery is projected to continue somewhat more slowly than the very rapid growth in real GNP that occurred from the first to second quarters of 1983. In the base case, GNP is forecast to rise by 3.1 percent from 1982 to 1983 and 4.8 percent from 1983 to 1984. This projection is based on the Data Resources, Inc., (DRI) CONTROL forecast of July 1983, as modified by the base-case price projection. Real disposable personal income (RDPI) is projected to continue to increase more rapidly than GNP. Manufacturing activity, which declined by 8.5 percent from 1981 to 1982 and is more sensitive to changes in the economy than GNP, is forecast to rise by 6.3 percent from 1982 to 1983 and 7.8 percent from 1983 to 1984. These indicators of economic activity are higher than those underlying the base case in the May 1983 Outlook for all forecast quarters. Inflation, as measured by the GNP deflator, was 6.0 percent from 1981 to 1982. The GNP deflator is projected to rise by 4.5 percent from 1982 to 1983 and 4.3 percent from 1983 to 1984. (Assumptions pertaining to prices, the economy, and weather are given in Table 3.)

In this Outlook, the alternative forecast cases are designated as high and low economic growth. These cases reflect macroeconomic projections (as modified by the oil price paths) that are significantly different from the base case. The high economic growth case is based on the DRI OPTIMO72783 forecast: GNP grows by 3.2 percent from 1982 to 1983 and by 5.7 percent from 1983 to 1984.

Table 3. Macroeconomic, Price, and Weather Data Assumptions for Low, Base, and High Economic Growth Cases

Assumptions	History									Projections								
	1980 Year	1981 Year	1982				1983		Econ. Growth	1983			1984					
			1st	2nd	3rd	4th	Year	1st	2nd		3rd	4th	Year	1st	2nd	3rd	4th	Year
Macroeconomic (billion 1972 dollars)																		
Real Gross National Product ^a	1,475	1,514	1,486	1,489	1,486	1,481	1,485	1,490	1,521	High	1,548	1,569	1,532	1,590	1,610	1,630	1,649	1,620
										Base	1,547	1,566	1,531	1,583	1,598	1,612	1,626	1,605
										Low	1,553	1,575	1,535	1,578	1,569	1,562	1,569	1,570
Percent Change from Prior Year	-0.3	2.6	-1.6	-1.5	-2.6	-1.7	-1.9	0.3	2.2	High	4.2	5.9	3.2	6.7	5.8	5.3	5.1	5.7
										Base	4.1	5.7	3.1	6.2	5.1	4.2	3.8	4.8
										Low	4.5	6.3	3.4	5.9	3.2	0.6	-0.4	2.3
GNP Implicit Price Deflator (Index, 1972=100)	178.4	195.1	203.4	206.1	208.0	210.0	206.9	212.8	215.2	High	217.1	219.1	216.1	221.0	222.8	224.8	227.0	223.9
										Base	217.2	219.4	216.2	221.7	224.1	226.5	229.2	225.4
										Low	217.1	219.6	216.2	222.2	225.1	227.3	229.8	226.1
Percent Change from Prior Year	9.2	9.4	7.1	7.1	5.6	4.4	6.0	4.7	4.4	High	4.4	4.3	4.3	3.8	3.5	3.5	3.6	3.6
										Base	4.4	4.5	4.5	4.2	4.1	4.3	4.5	4.3
										Low	4.4	4.6	4.5	4.4	4.6	4.7	4.6	4.6
Real Disposable ^b Personal Income	1,022	1,055	1,055	1,060	1,059	1,066	1,060	1,074	1,082	High	1,107	1,119	1,095	1,137	1,145	1,154	1,163	1,150
										Base	1,107	1,119	1,095	1,137	1,144	1,152	1,161	1,148
										Low	1,110	1,126	1,098	1,139	1,138	1,137	1,143	1,139
Percent Change from Prior Year	0.6	3.2	1.4	1.4	-0.8	0.2	0.5	1.8	2.0	High	4.5	5.0	3.3	5.9	5.8	4.2	3.9	5.0
										Base	4.5	5.0	3.3	5.9	5.7	4.1	3.8	4.8
										Low	4.8	5.6	3.6	6.1	5.2	2.4	1.5	3.7
Index of Industrial Production (MFG) (Index, 1967=100)	146.7	150.3	139.8	138.1	137.7	134.5	137.5	138.4	144.9	High	149.5	152.6	146.4	155.8	159.3	163.0	166.7	161.2
										Base	149.3	151.8	146.1	154.1	156.4	158.6	161.0	157.5
										Low	150.5	154.3	147.0	153.9	150.8	148.1	148.6	150.4
Percent Change from Prior Year	-4.5	2.4	-7.6	-9.4	-9.7	-7.2	-8.5	-1.0	4.9	High	8.6	13.5	6.5	12.6	9.9	9.0	9.2	10.1
										Base	8.4	12.9	6.2	11.3	7.9	6.2	6.1	7.8
										Low	9.3	14.7	6.9	11.2	4.1	-1.6	-3.7	2.3
Oil Price (U.S. nominal dollars/barrel)																		
Imported Crude Oil Prices ^c	33.89	37.05	35.03	33.13	33.14	33.07	33.55	30.20	28.31	High	28.66	26.54	28.43	25.00	25.00	25.00	25.00	25.00
										Base	28.95	29.00	29.11	29.00	29.00	29.00	29.00	29.00
										Low	29.02	29.63	29.29	30.27	30.91	31.55	32.24	31.24
U.S. Refiners' Cost ^d	28.07	35.24	33.05	31.20	31.53	31.78	31.87	29.61	28.49	High	28.66	26.54	28.32	25.00	25.00	25.00	25.00	25.00
										Base	28.95	29.00	29.01	29.00	29.00	29.00	29.00	29.00
										Low	29.02	29.63	29.19	30.27	30.91	31.55	32.24	31.24
Weather ^e (number of degree days)																		
Heating Degree Days	4,857	4,653	2,542	600	105	1,507	4,754	2,227	624		88	1,669	4,608	2,398	539	88	1,669	4,695
Cooling Degree Days	1,281	1,168	36	294	702	65	1,097	19	310		755	63	1,147	28	327	755	63	1,173

^a Macroeconomic projections from three DRI model forecasts are seasonally adjusted at annual rates, and modified as appropriate to the three world oil price cases. Historical data: U.S. Department of Commerce, Survey of Current Business, July 1983.

^b Seasonally adjusted at annual rates.

^c Cost of imported crude oil to U.S. refiners.

^d U.S. refiners' acquisition costs of foreign and domestic crude oil.

^e Degree day data weighted by population, revised December 1981.

Sources: Historical data: Energy Information Administration, Monthly Energy Review DOE/EIA-0035(83/08), Bureau of Economic Analysis, U.S. Department of Commerce, Survey of Current Business, as revised, July 1983; National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Monthly State, Regional, and National Heating Degree Days Weighted by Population, April 1983; and the Federal Reserve System, Data Release G.12.3, July 1983. Macroeconomic forecasts based on modifications to Data Resources, Inc., forecasts CONTROL072683, OPTIMO72783, and TROUBLE84072883.

The low economic growth case is based on DRI's TROUBLE84072883 forecast. In this case, GNP grows by 3.4 percent from 1982 to 1983 and is higher in the second half of 1983 than in the base and high economic growth cases. As a result, there is a rapid rise in interest rates in late 1983. This leads to a decline in GNP in the second and third quarters of 1984 so that 1983 to 1984 GNP growth is only 2.3 percent.

Energy Product Prices

Petroleum product prices, as shown in Figure 2, are expected to remain relatively stable through 1984, based on the assumption of flat world oil prices over this period (see Table 4). Minor price fluctuations between quarters mainly result from either seasonal variations (such as heating oil being more expensive during the winter) or changes in inventory levels relative to consumption (days' supply).

Motor gasoline prices are projected to peak in the third quarter of 1983, as demand increases during the peak driving season. Due to the assumption of stable world oil prices, motor gasoline prices from 1983 to 1984 are expected to remain essentially level.

Retail heating oil prices fell sharply from the fourth quarter of 1982 to the second quarter of 1983 (by more than 15 cents per gallon), but are expected to be slightly higher than current levels by the fourth quarter of 1983. Heating oil prices are projected to be about 8 cents per gallon lower for the upcoming winter than during the last heating season. Fourth-quarter-1984 prices for heating oil are expected to be 2 to 3 cents per gallon above year-earlier levels.

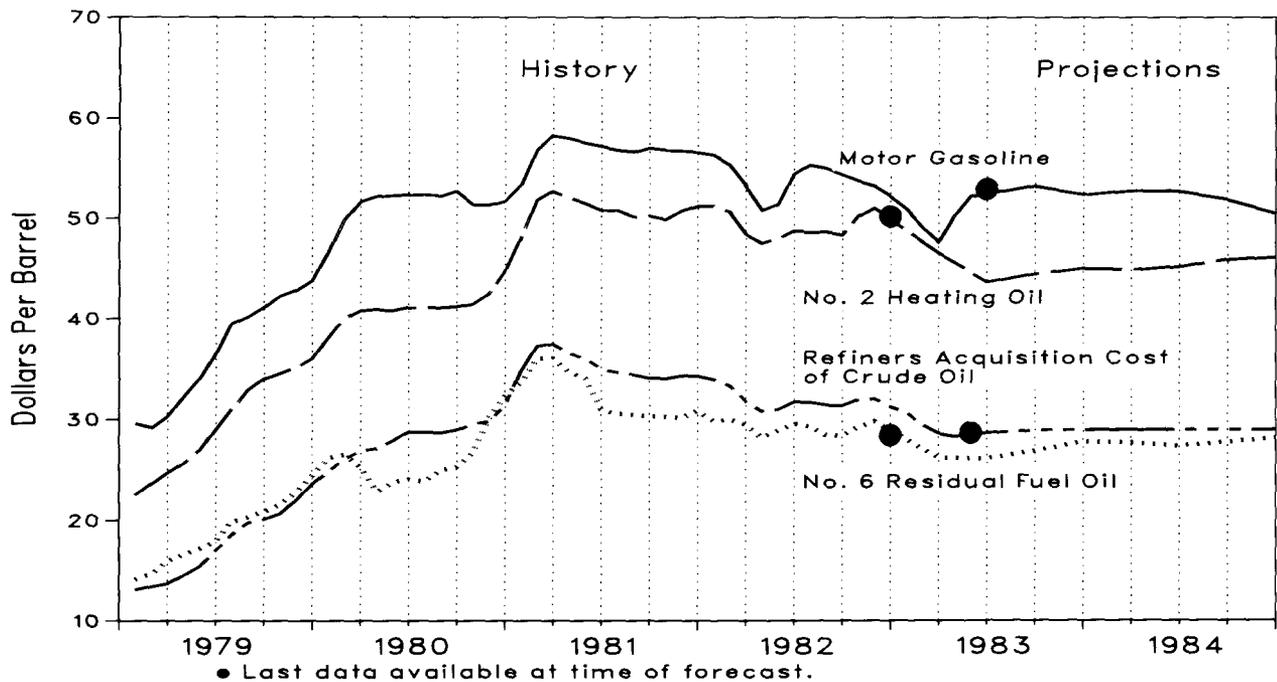


Figure 2. Retail Prices for Petroleum Products

A reversal of the declining trend for retail residual fuel oil prices is expected to begin during the third quarter of this year, following a period of soft demand for this fuel. As the economy improves, increased demand for residual fuel oil is expected to push prices up slightly to a projected high of \$28.18 per barrel in the fourth quarter of 1984.

Due to wellhead price increases allowed under the NGPA, the average price of natural gas to residential users is projected to increase by 17 percent from 1982 to 1983 but by only 8 percent from 1983 to 1984. Margins between the wellhead price and the price to residential users are assumed to remain flat in real terms in 1984.

World Petroleum Situation

During the first three quarters of 1983, the world demand for oil continued to be very weak as the Organization for Economic Cooperation and Development (OECD) countries slowly recuperated from an estimated 0.4-percent decline in economic activity during 1982. This weakness follows 3 consecutive years of declining oil consumption and drawdowns of world oil stocks. In addition, supplies from other countries have been gradually increasing. These trends created strong pressures on oil-exporting countries to discount their sales prices early this year.

In March, the members of OPEC decided on a restructured set of lower oil prices with the Saudi Arabian marker crude set at \$29 per barrel. In addition, new crude oil production quotas were set with an overall ceiling of 17.5 million barrels per day. Since March, the prices have firmed as the major worldwide drawdowns of oil stocks slowed and the market policies of OPEC took effect. Recently, spot prices for some oils have risen above their official sales prices. These increases have encouraged belief that OPEC might consider raising the overall production ceiling or the crude oil marker price (\$29 per barrel) by the time of its next ordinary session scheduled for December in Geneva. As of this writing the OPEC Market Monitoring Committee planned to meet on September 15 to study oil prices and production.

Oil prices are projected to remain at the August 1983 level throughout the forecast period. Table 5 summarizes the international petroleum outlook for the remainder of 1983 and the four quarters of 1984. World oil inventories are expected to be further reduced during 1983 to 4.2 billion barrels. Petroleum supplies, the sum of production in non-Communist countries and net Communist exports, are projected to total 43.6 million barrels per day during 1983, down by 0.6 million barrels per day from 1982. During 1984, supplies are projected to increase by 3.5 million barrels per day as oil consumption increases and oil stocks are rebuilt after 4 consecutive years of decline.

Non-Communist world petroleum production in 1982 was 42.7 million barrels per day. This was a reduction of 2.8 million barrels per day from 1981 and reflected the influence of declines in oil consumption and drawdowns of oil inventories. This pattern has continued during the first half of 1983. However, these trends are expected to end during the second half of 1983 when world oil production is projected to be slightly more than 1.0 million barrels per day higher than in the second half of 1982. For the full year of 1983, the projections show a decline in non-Communist oil production of 0.6 million barrels per day. The increases in production during the second half of 1983 are expected to continue in 1984 with the year 1984 projected to have 3.5 million barrels per day more production than in 1983.

World oil consumption in 1983 is projected to decline for the 4th consecutive year (see Table 5). However, the persistent declines in oil demand are expected to end during the second half of 1983 as economic growth in the industrial countries begins to increase these countries' requirements for petroleum. The outlook is for a resumption of economic growth with an overall increase of Gross Domestic Product (GDP) in the OECD countries of 2.0 percent in 1983. (Table 6 gives growth rates for the OECD and its major components.) Consumption is projected to increase by 1.6 million barrels per day from 1983 to 1984 as OECD economic growth expands to 3.5 percent for the year.

During 1982 and 1983, the decline in world oil consumption has been accompanied by large drawdowns of oil stocks. These major declines are projected to end in the second half of 1983 (see Figure 3). The lowered inventory levels may cause concern over whether end-of-1983 stocks are likely to be adequate for anticipated requirements. The projected inventory level of 4.2 billion barrels at the end of 1983 will be low by recent historical standards. These stocks would provide an estimated 87 days of oil supply.

Table 6. International Economic Growth

Region	Annual Average		
	1970-1982	1983 ^{a b}	1984 ^{a b}
OECD Total ^c	2.8	2.0	3.5
United States ^d	2.7	3.1	4.8
Western Europe ^c	2.6	0.7	2.1
Japan ^c	4.5	3.2	4.1
Other ^e	3.1	2.0	3.7

^a Preliminary estimates.

^b Year-to-year rate of change.

^c GDP.

^d GNP.

^e Canada, Australia, and New Zealand.

Source: Organization for Economic Cooperation and Development, Main Economic Indicators, August 1983, and Wharton Econometric Forecasting Associates, World Economic Outlook, Post-Meeting Forecast, June 1983. Data Resources, Inc.: Canada's Forecast, Control 0783; European Forecast, Control 0783; and Japan's Forecast, Control 0783.

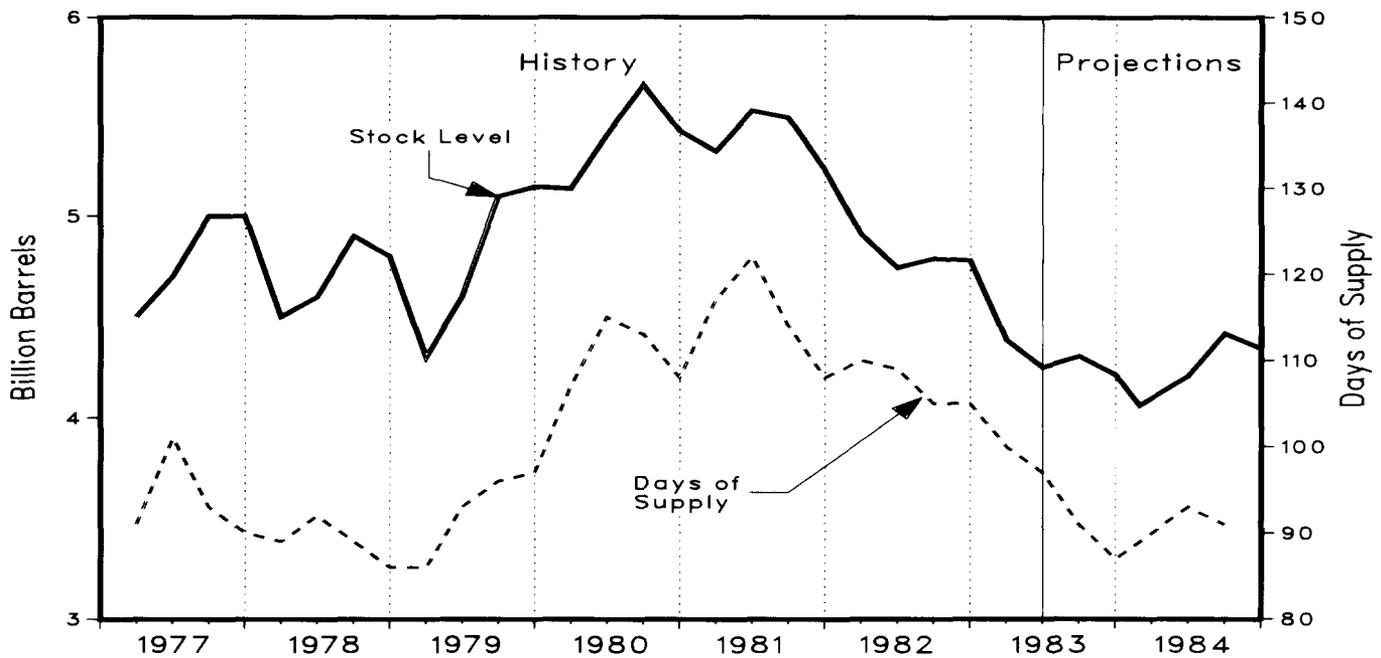


Figure 3. Non-Communist World Oil Stocks

This is slightly higher than the estimated 85 days' supply at the outbreak of the Iranian revolution near the end of 1978. However, the current surplus in sustainable production capacity and low refinery utilization rates around the world should ensure that international oil stocks will be sufficient for 1984. From 1983 to 1984, oil stocks are projected to rise by 0.3 million barrels per day.

U.S. Petroleum Outlook

Overview

Total 1983 petroleum consumption is forecast to average 15.2 million barrels per day, a very slight decline from the 1982 level. Thus, 1983 is projected to be the 5th consecutive year of decline since U.S. petroleum consumption reached its peak in 1978. (The base case petroleum forecast is presented in Table 7; alternative cases for high economic growth and low economic growth are presented in Tables 8 and 9, respectively.)

The consumption of each major petroleum product is projected to change very little from 1982 to 1983—with the exception of residual fuel oil, which is projected to decline by over 13 percent. This slight decline in total consumption reflects the net result of a more-than-4-percent decline in petroleum consumption from the first half of 1982 to the first half of 1983 (in large part the result of mild weather in early 1983) and the stimulative effects of a projected 3.1 percent year-to-year rise in GNP and a 9-percent decline in the average cost of crude oil to U.S. refiners from 1982 to 1983. (The sensitivity of total petroleum consumption to uncertainty about price, weather, and economic activity is shown in Table 10.)

Based on the assumptions that GNP will grow by 4.8 percent from 1983 to 1984 and that nominal crude oil prices will remain at August 1983 levels, total 1984 petroleum consumption is projected to be about 16 million barrels per day, 5 percent higher than in 1983. The consumption of all major product categories, with the exception of motor gasoline, is projected to increase from 1983 to 1984. Distillate fuel oil consumption is forecast to rise by over 10 percent while residual fuel oil consumption rises by more than 13 percent.

Total primary petroleum inventories are projected to decline by 6.5 percent from 1,168 million barrels at the end of 1982 to 1,096 million barrels at the end of 1983. The last 2 years' decline in primary inventories is projected to end in 1984, with stocks rising above year-earlier levels in the second half of the year and reaching 1,139 million barrels by year end.

Net petroleum imports in 1983 are projected to remain near the 1982 level of 4.3 million barrels per day. A reversal of the last few years' decline in petroleum imports is projected, with net petroleum imports averaging 5.5 million barrels per day in 1984.

During the first 6 months of 1983, refinery inputs have been below the levels in the first halves of 1981 and 1982. Over the same period, operable crude oil distillation capacity in refineries has fallen because of the closing of some less-efficient refineries. From mid-1981 to mid-1983, operable refinery capacity declined by about 10 percent, to 16.8 million barrels per day.

Domestic Petroleum Production

Domestic crude oil production in 1983 is projected to be 8.66 million barrels per day, essentially unchanged from the 1982 level. Alaskan North Slope production is projected to rise slightly, while Lower-48-States' production declines. Much of the recent slowdown in the decline of petroleum production in the Lower-48 States is attributed to faster production from reserves in older producing areas, rather than to the discovery of significant new reserves. A year-to-year decline of 1.4 percent, to 8.54 million barrels per day, is projected for 1984.

Exploration and drilling activity has been slowed by the decline in the price of crude oil since early 1981 together with high real interest rates. Although the reported number of oil well completions during 1982 was 7 percent above the 1981 level, monthly oil well completions have been below year-earlier levels from August 1982 to May 1983 and averaged 10.4 percent below year-earlier levels in the first 5 months of 1983.

Recent data on drilling activity and seismic exploration suggest that the decline in oil well completions may continue. The total number of rotary rigs in operation peaked in December 1981 and has been below year-earlier levels since April 1982. The average number of rotary rigs in operation during the first 5 months of 1983 was more than 44 percent below year-earlier levels. The total number of crews engaged in seismic exploration peaked in September 1981 and declined almost continuously through May 1983, when it was almost 26 percent below year-earlier levels.

Petroleum Inventories

In terms of both total inventories and days' supply, stocks are projected to be lower than during the period of unusually high inventories that followed the major increase in petroleum prices in 1979. (See Table 11 and Figure 4.) End-of-year primary stocks for 1983 and 1984 are projected to be 72.2 and 71.4 days' supply (at the prior year's rate of product supplied), respectively. This is a substantial decline from 78 days' supply at the end of 1981, but well above the 67.5 days' supply level reached at the end of 1979. Throughout the forecast period, seasonal changes in petroleum product stocks are projected to be slightly less pronounced than in the past. Seasonal swings in total petroleum inventories are expected to continue to be dominated by product stocks while crude oil inventories stabilize.

The projection of crude oil fill rates for the Strategic Petroleum Reserve (SPR) is based on SPR crude oil requirements and projected deliveries to support permanent SPR capacity development. The fill rate realized after the third quarter of 1983 will, however, depend on the availability of funding as determined by the Fiscal Year 1984 budget.

Petroleum Imports

Net petroleum imports have already risen from the very low 3-million-barrel-per-day level that was reached in the first quarter of 1983. During 1983, net petroleum imports are projected to be essentially unchanged from the 1982 level of 4.3 million barrels per day. (Net imports in 1982 were the lowest since 1971.) In 1984, net imports are projected to average over 5.5 million barrels per day, 28 percent above year-earlier levels.

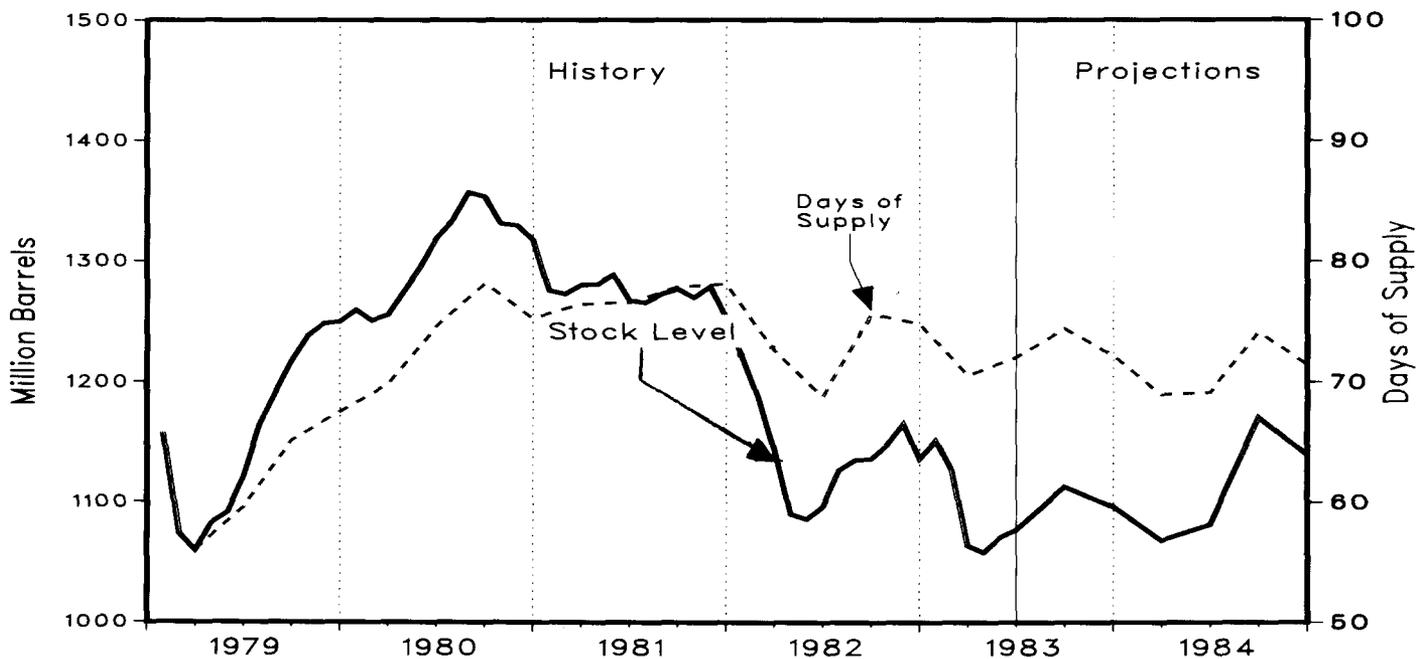


Figure 4. Total Petroleum Inventories, Excluding SPR

In the last few years, sources of imported petroleum have been shifting back toward producing countries that are relatively close to the United States. From 1981 to 1982, oil imports from OPEC countries dropped from 55 percent to 42 percent of total imports. In 1982, Mexico became the largest single source of petroleum imports to the United States, followed by Saudi Arabia and Nigeria. By the first 5 months of 1983, the major suppliers of oil imports were Mexico, Canada, Venezuela, and the United Kingdom. Saudi Arabia and Nigeria had been the largest sources of petroleum imported to the United States from 1975 to 1981.

Total 1983 oil imports, measured on a balance-of-payments' basis, are projected to cost \$55.4 billion, almost 10 percent less than in 1982, primarily as a result of lower prices for crude oil. This is a significantly smaller decline than the 21-percent drop in the cost of petroleum imports from 1981 to 1982, when oil imports cost \$61.2 billion. Imports in 1984 are projected to cost approximately \$68 billion, about 23 percent more than in 1983, almost entirely because of an increased volume of imports. (The total cost of oil imports on a balance of payments' basis is the cost of oil delivered alongside ship at the exporting countries, so that the cost of transportation to the United States is not included. Gross imports include both crude oil and products delivered to the 50 States and U.S. territories, including imports for the SPR.)

Motor Gasoline

Consumption of motor gasoline has declined during each of the last 4 years, although from 1981 to 1982 consumption was nearly flat. During the first 6 months of 1983, gasoline consumption (as measured by product supplied) averaged 6.48 million barrels per day, very slightly lower (by 19,000 barrels per day) than the average consumption during the first half of 1982.

The base case forecast of motor gasoline consumption is basically flat from 1982 through 1984 (see Table 12). From 1982 to 1983, gasoline consumption is projected to increase by about 50,000 barrels per day to an average of 6.59 million barrels per day. In 1984, gasoline consumption is expected to remain stable.

The projections of gasoline consumption can be explained by examining the changes in the determinants of consumption of automobile gasoline (which accounts for two-thirds of total gasoline demand) as shown in Figure 5. From 1982 to 1983, with a 10-percent lower real fuel cost per mile of travel and higher consumer income, passenger-car vehicle-miles are expected to increase by 3.1 percent. Preliminary data from the Federal Highway Administration (FHWA) show an increase of almost 4 percent in total vehicle-miles during the first half of 1983 over year-earlier levels. Higher gasoline demand from the increase in travel is nearly balanced by the savings from the forecasted 2.8 percent 1982-to-1983 increase in average auto stock fuel efficiency. These factors combined result in a very small increase in automobile gasoline demand in 1983.

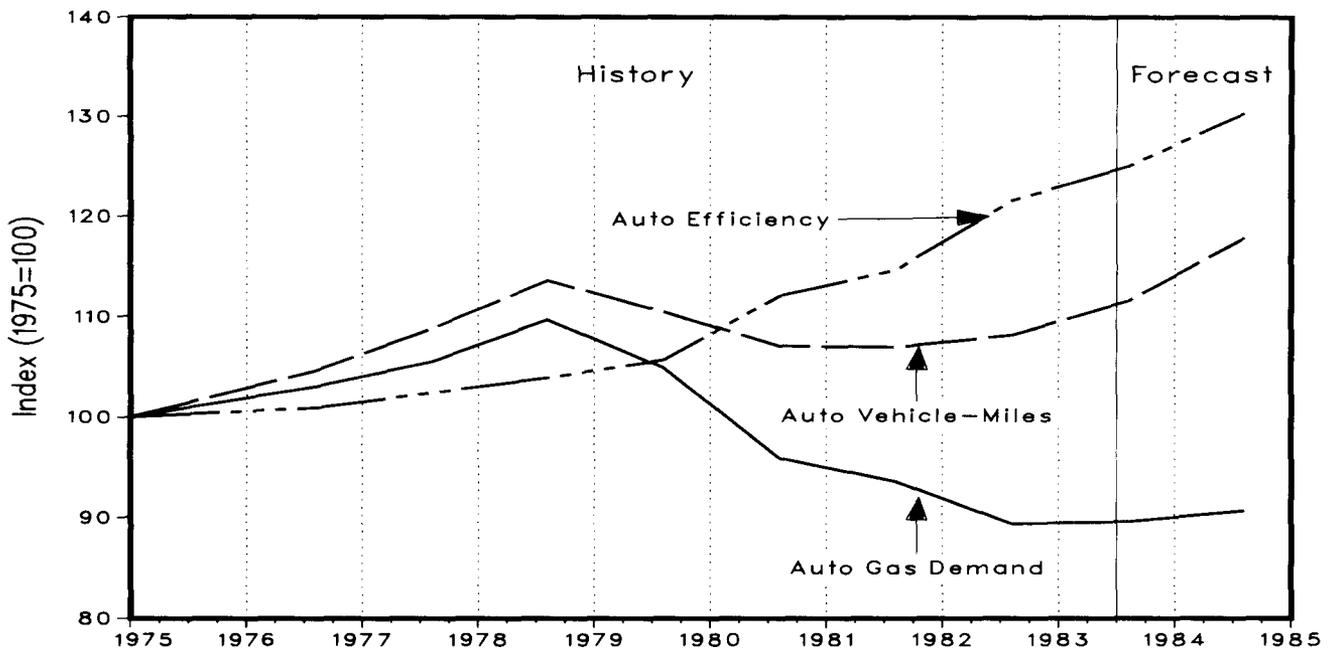


Figure 5. Motor Gasoline Market Indicators

Projections of continued growth in real disposable personal income and industrial production (which affects the demand for nonauto gasoline) in 1984, in addition to a 7.6-percent decline in the real fuel cost per mile of travel and a decrease in the rate of unemployment, result in a projected 5.6-percent increase in passenger-car vehicle-miles. Despite a 4.3-percent growth in the average auto stock efficiency from 1983 to 1984 (based on DRI's projected higher new-car sales and scrappage rates for older, less-efficient cars), the higher growth in the demand for travel accounts for the slight increase in the forecast of gasoline consumption.

The only projected decline in gasoline consumption occurs in the 1984 low-economic-growth case: with consumers' income forecast to increase by only 4 percent over the 1983 base case level and real prices expected to increase by almost 1 percent, gasoline consumption could actually decline to 6.47 million barrels per day in 1984. In the high-economic-growth case, which combines higher income and lower prices than the base case, gasoline consumption is forecast to increase to 6.72 million barrels per day in 1984.

Distillate Fuel Oil

Distillate fuel oil demand in 1983 is projected in the base case to average only 2.62 million barrels per day, the lowest level in 13 years and a 1.9-percent decrease from 1982 (see Table 13). An abnormally warm first quarter, with population-weighted heating degree days 7 percent below normal levels and 12 percent below the first-quarter 1982 level, as well as a still-sluggish economy early in the year kept demand low during the first quarter of 1983. A strong economic recovery, assumed normal weather, and a continuation of stable or falling

prices, however, are expected to halt the 5-year declining trend in distillate consumption in 1984. Demand is projected to average 2.89 million barrels per day, a 10-percent increase over the 1983 forecast.

Most of the projected increase in demand is due to the improved economic situation. Powering the upturn in consumption is a projected strong recovery in industrial production, the primary economic variable driving distillate demand, and a return to normal weather. In the base case macroeconomic projection, industrial production is expected to increase by 7.8 percent from 1983 to 1984. While the recovery is expected to continue through 1984, the largest percentage change from year-earlier levels is projected for the first quarter, with industrial production up by 11 percent from the level in the first quarter of 1983.

The increase in 1984 is expected to occur mainly in the heating and industrial uses of distillate. The consumption of diesel fuel, which now accounts for well over half of total distillate demand, is expected to increase by only about 50,000 barrels per day from 1983 to 1984. Demand for heating oil (residential, commercial, and industrial) is expected to increase by over 200,000 barrels per day from 1983 to 1984, both because of the abnormally warm first quarter of 1983 and because these sectors are more responsive than the transportation sector to increased economic activity. While "dieselization," particularly of the private automobile fleet, has been important in recent years, it may now be waning due to the plentiful supplies of gasoline and the narrowing of the difference between the prices of diesel fuel and gasoline.

Even in the low-economic-growth case shown in Table 9 (where industrial production increases by only 2.3 percent from 1983 to 1984), distillate demand is projected to show an increase over the 1983 level, with demand up 2.3 percent to 2.69 million barrels per day. In the high-economic-growth case shown in Table 8, with industrial production increasing more than 10 percent from 1983 to 1984, distillate demand is 3.08 million barrels per day, almost 17 percent above the 1983 level. While the price and income assumptions made in the extreme cases do not have a high likelihood of occurring, this range of demand projections illustrates the uncertainties in the forecast related to the intensity of the economic recovery and the sensitivity of distillate demand to industrial activity.

Winter Outlook for Heating Oil Next winter's base case demand for distillate fuel oil is expected to be 3.20 million barrels per day, almost 17 percent above last winter's level. In addition to the 11-percent increase in industrial production expected from this winter to next winter, the assumed normal level of heating degree days implies that this winter would be about 9 percent colder than the winter of 1982-83. For the two quarters of the 1983-84 heating season, it is estimated normal weather would cause distillate consumption to be about 80,000 barrels per day higher than if last winter's weather were to recur. Although primary stock levels of distillate continue to be low by historical standards, the combination of high crude oil stocks, substantial excess refining capacity, and the availability of both crude oil and refined products on the world markets implies adequate supplies to meet winter demands for this fuel.

Residual Fuel Oil

Residual fuel oil consumption has dropped sharply since the peak year of 1977 when demand averaged over 3.1 million barrels per day. In 1982, residual fuel oil consumption averaged 1.7 million barrels per day; this level is expected to decline to about 1.5 million barrels per day in 1983. Some of this decline was due to the slow economic activity that occurred in the first half of 1983 and to the corresponding drop in total electricity generation. In the electric utilities sector, which accounts for about 41 percent of total residual fuel oil demand, other fuels, including coal, nuclear, and hydroelectric power, have been displacing residual fuel. Another reason for the drop in residual fuel oil consumption may be losses of domestic residual fuel sales as a bunker fuel to sales in foreign ports. The price advantage that Los Angeles Harbor had over Singapore, for example, is now gone.

As the economy continues to rebound in 1984, residual fuel demand is expected to increase over 1983 levels (see Table 14), although demand for this fuel is still not expected to reach 1982 levels. Shipments of residual fuel oil to electric utilities are expected to increase from 1983 to 1984. This is due to both the expected increase in total electricity generation and to the decreasing price differential between this fuel and its main competitor, natural gas.

Other Petroleum Products

The "other" petroleum products category includes jet fuel, liquefied petroleum gases (excluding ethane), petroleum coke, kerosene, road oil and asphalt, still gas, petrochemical feedstocks and ethane, waxes, lubricants, aviation gasoline, special naphthas, and miscellaneous products.

Jet fuel consumption remained flat during 1981 and 1982 at an average of 1.01 million barrels per day. In 1983, the base case projection of jet fuel consumption shows a slight increase to an average of 1.04 million barrels per day. During 1984, with the expected decrease in jet fuel prices and the increase in consumers' income, jet fuel consumption is projected to increase to an average of 1.09 million barrels per day. In past issues of the Outlook, a slight reduction in demand resulting from the 1981 Professional Air Traffic Controllers' (PATCO) strike was factored into the jet fuel forecast. However, according to the Federal Aviation Administration, beginning in 1983, the PATCO strike should no longer have any effect on jet fuel consumption.

Consumption of liquefied petroleum gases (LPG's) is expected to remain essentially unchanged, averaging about 1 million barrels per day through 1984, although normal seasonal variation will occur. Demand for "other" petroleum products, excluding jet fuel and LPG's (but including ethane), is projected to increase by about 9 percent from 1983 to 1984, to almost 2.7 million barrels per day, in the base case. Primarily driving the increase are projected increases in industrial production and an 8.6-percent increase in the index of chemical production, which

is a key determinant for petrochemical feedstocks demand. The low-economic-growth case decreases 1984 consumption of "other" petroleum products by about 125,000 barrels per day relative to the base case, but still results in a year-to-year growth of about 3 percent.

Petroleum Demand Sensitivities

Table 10 shows the response of petroleum demand to changes in prices, income, and weather. The low and high price demands are based on the price paths shown in Table 4, holding the variables representing economic activity at their base case levels. The economic sensitivities are derived from the low and high growth economic assumptions given in Table 3, holding prices at their base case trajectories. The weather sensitivities are based on variations in population-weighted heating degree-days and cooling degree-days of 10 percent in the first and fourth quarters, and 15 percent in the second and third quarters, respectively. The upper range of projected demand in Table 10 is calculated by adding the square root of the sum of the squared adverse weather and high economic sensitivities to the low price demand. The lower range of projected demand is calculated by subtracting from the high price demand the square root of the sum of the squared favorable weather and low economic sensitivities (see Figure 6).

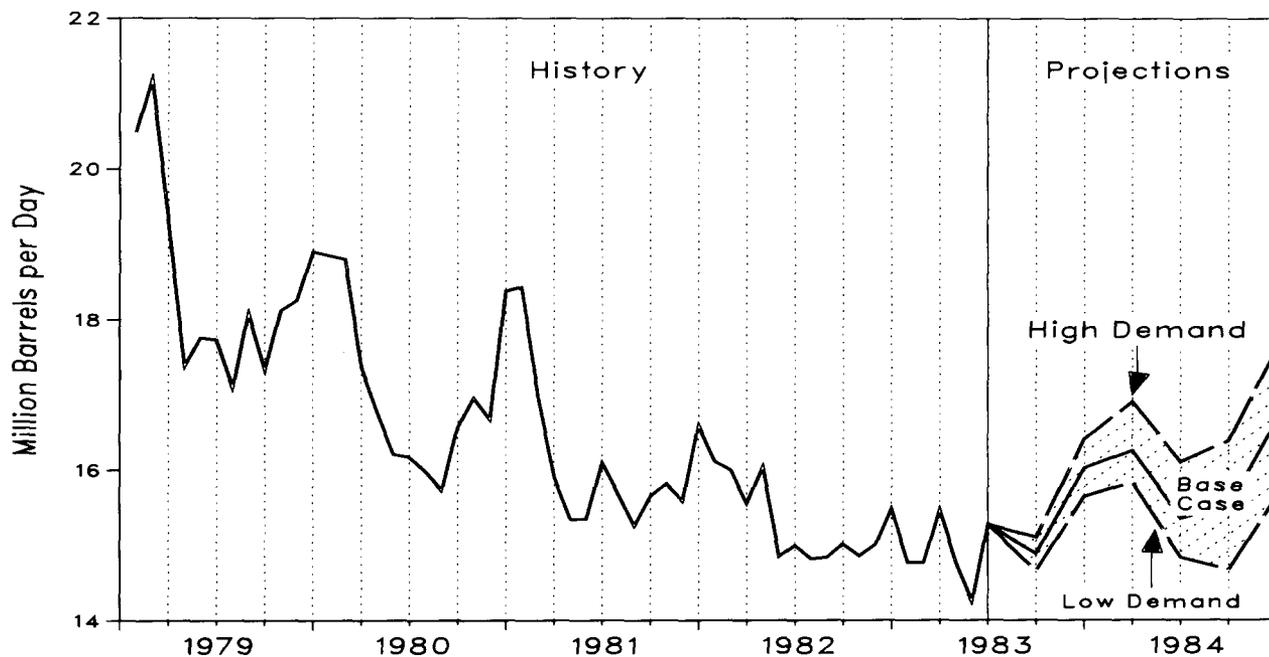


Figure 6. Total Petroleum Demand

Projections for Other Major Energy Sources

Natural Gas

Total U.S. natural gas consumption and production are forecast to decline in 1983 for the 4th consecutive year. In the first half of 1983, natural gas consumption and production dropped sharply, by 11.2 percent and 7.8 percent, respectively, from year-earlier levels (see Table 15). The economic recovery is expected to be evident in the natural gas market by the fourth quarter of 1983, when both domestic natural gas consumption and domestic production increase over year-earlier levels. The fourth-quarter recovery in natural gas demand is not expected to offset the particularly low first half, thus resulting in a net decline in domestic natural gas consumption and production for the year. The outlook for both 1984 natural gas consumption and production is for an increase of 6.9 percent from 1983. The projected turnaround in natural gas demand is contingent on the effects of a strong economic recovery, along with a return of normal winter weather, overriding the effects of higher natural gas prices.

Natural Gas Demand Total industrial, residential, and commercial gas consumption declined by 7.2 percent to 14 trillion cubic feet in 1982. In the first quarter of 1983, total industrial, residential, and commercial gas use was 14.7 percent below year-earlier levels, largely driven by the lower heating requirements due to the mild winter and high gas prices. The second quarter of 1983 was colder than normal, particularly in April and May, resulting in a 2-percent increase in total gas demand for the three sectors combined relative to year-earlier levels. By the fourth quarter of 1983, total demand for the three sectors combined is forecast to be 3.3 percent above year-earlier levels, primarily as a result of a strong economic recovery. The continuing high economic growth forecast through 1984 and the assumed return to normal heating-season requirements cause the gas demand forecast for the combined industrial, residential, and commercial sector to increase by 3.7 percent above year-earlier levels.

Electric utility demand for natural gas declined by 11.3 percent from 1981 to 1982 because of the decline in total electricity generation, the high prices for gas, and the record high level of hydroelectric generation in the West. The first half of 1983 continued this downward trend, with electric utility natural gas consumption 16 percent below year-earlier levels. This trend is expected to reverse by the fourth quarter of 1983, as electric utility natural gas use increases along with the demand for electricity relative to the same period in 1982. In 1984, electric utility demand for natural gas is projected to be 21 percent above the 1983 level because of the forecast 5.3-percent increase in total electricity generation and an assumed return to normal levels of hydroelectricity production in 1984.

Natural Gas Supply Domestic production of natural gas is projected to be 16.3 trillion cubic feet in 1983, 7.2 percent below the 1982 level. Thus, 1983 is expected to experience the lowest level of U.S. natural gas production in 17 years. In the first half of 1983, natural gas production was 7.9 trillion cubic feet, 13.3 percent below year-earlier levels. This low level of production

reflected the depressed level of natural gas demand. Concurrent with the expected natural gas demand recovery in 1984, natural gas production is projected to rise to 17.4 trillion cubic feet, a 6.9-percent increase over the 1983 level.

Pipeline imports of natural gas from Canada and Mexico are projected to provide about 5 percent of U.S. gas consumption through 1984. In 1982, liquefied natural gas (LNG) imports from Algeria were approximately equal to U.S. LNG exports to Japan. However, imports of Algerian LNG during the first half of 1983 were about 83 billion cubic feet, four times the amount received in the first half of 1982, while U.S. LNG exports remained level. The sharp increase in Algerian LNG imports, which started in November of 1982, is the result of commitments under previously negotiated contracts. In the forecast period, U.S. LNG exports are expected to remain essentially unchanged while LNG imports from Algeria continue at their most recent levels, leading to net LNG imports of approximately 90 billion cubic feet in 1983 and 70 billion cubic feet in 1984.

Coal

Domestic coal production for the first half of 1983 was 13.7 percent below the level for the same period in 1982 (see Table 16). Although production for the second half of 1983 is expected to be approximately 4 percent higher than during the first half of the year, the projected annual production of 769 million tons will be the lowest since 1978, which was a strike year. Lower 1983 production partly reflects an expected decline of 31 million tons in U.S. coal exports compared to 1982. This decline in exports represents approximately twice the falloff projected for 1983 in the May Outlook. Domestic consumption of coal is expected to increase only slightly from 1982 to 1983, mostly because of weak demand recorded in the first quarter of 1983. The expectation that both primary and secondary coal stocks will be drawn down in 1983, in contrast to the large buildup evidenced in 1982, is another downward influence on projected coal production for 1983.

Coal Consumption Total coal consumption for 1983 is not expected to increase significantly beyond the level recorded for 1982. The upsurge in coal consumption during the third and fourth quarters of 1983 will not greatly compensate for the lost consumption in the first half of the year, which was the result of mild weather and the recession. Total electricity generation is expected to increase in the second half of 1983 to levels generally above those in the second half of 1982 (see Table 17). However, electric utilities' consumption of coal in the second half of 1983 is forecast to be about equal to year-earlier levels. This development is in part explained by the expected record year for hydroelectric generation.

The second half of 1983 is forecast to bring a 38.8-percent increase over the first half in coke plant consumption of coal, reflecting the expectation of resurgence in steel industry activity. However, the 45 million tons and 52 million tons forecast for 1983 and 1984, respectively, remain well below historical levels. A continued strong U.S. dollar, in comparison to other

major currencies, will continue to adversely affect the competitiveness of raw steel production in the United States relative to semifinished and finished steel imports.

Retail and general industrial use of coal is not forecast to recover to 1982 levels until the fourth quarter of 1983. In 1984, annual consumption of coal by this sector is expected to match the 1982 level of about 72 million tons.

Coal Exports Coal exports in 1983 are projected to decline dramatically from 1982 levels due to a combination of factors including the settlement of labor trouble in Poland, an increase in production from Australia, and the strength of the dollar relative to other currencies. The slight increase in coal exports projected for 1984 is based on the expected rates of economic growth for Japan and Western Europe, which should slightly increase the demand for U.S. coal by these sources.

Electric Power

Total electricity generation in 1982 (see Table 17) was 2,241 billion kilowatt-hours, a 2.3-percent decline from the 1981 level. This drop can be attributed mainly to the economic recession: industrial demand for electricity, which is very sensitive to the level of economic activity, was nearly 10 percent below the 1981 level. Despite the beginning of the economic recovery, electricity generation during the first half of 1983 was 2.4 percent below year-earlier levels. Most of this decline can be attributed to the lagging recovery of electricity-intensive industries, particularly in the first quarter of 1983. Unusual weather (a warm winter and a cool spring) also contributed to this decline.

The forecast for electricity generation through 1984 is dependent both on the projected level of economic activity and on the degree to which electricity demand is expected to respond to economic growth. These uncertainties could have a cumulative effect on the electricity forecast: If, for example, economic activity does not achieve the relatively optimistic growth rates assumed in the base case (including 1983 to 1984 growth of 4.8 percent in disposable personal income) and, if the turnaround in industrial electricity demand is not as strong as assumed (perhaps indicating some fundamental structural change), total electricity demand could be lower than the levels forecast here.

Based on different assumed rates of economic growth for 1983 and 1984, a range of forecasts for total electricity generation was produced. An assumed return to normal weather in the last half of 1983 coupled with fairly healthy economic growth results in a base case forecast of about 2,260 billion kilowatt-hours in 1983, an increase of 0.9 percent over the 1982 level. However, this growth could range from 1.5 percent in the high-economic-growth case to a 0.5 percent in the low-economic-growth case.

If economic growth from 1983 to 1984 is not as strong as now expected (with personal income increasing by only 3.8 percent in the low-economic-growth case), electricity demand is projected to increase by about 4.0 percent from 1983 to 1984, compared with the 5.3-percent increase forecast in the base case. The low-economic-growth-case generation level of 2,342 billion kilowatt-hours in 1984 represents a total increase of only 2.1 percent over the 3-year period from 1981 to 1984. A strong recovery in economic activity in 1984 (the high-economic-growth case), especially in those industrial areas such as primary metals and chemicals that are very electricity-intensive, could result in total generation of over 2,400 billion kilowatt-hours in 1984.

The residential price of electricity, which has been increasing at double-digit rates for the past 3 years, is expected to moderate in 1983, increasing only 4.5 percent from 1982 to 1983 and 6.8 percent from 1983 to 1984. Interest rates for newly issued utility bonds are forecast to be lower in 1983 and 1984 than in 1982 (although slightly higher than assumed in the May 1983 Outlook). Increases in the cost of fuel to electric utilities are also expected to be lower than in 1982.

Generation by Energy Source As shown in Figure 7, shares of electricity generation in 1983 are expected to be: 54 percent coal, 12 percent natural gas, 13 percent nuclear power, 7 percent petroleum, 14 percent hydroelectric power, and less than 1 percent other energy sources. The forecast increase in total generation of 21 billion kilowatt-hours from 1982 to 1983 is projected to come mostly from increases in generation from coal, nuclear power, and hydroelectric power, while natural-gas-fired generation declines.

Electricity generation from nuclear power is forecast to be 297 billion kilowatt-hours in 1983, 4.9 percent over the 1982 level. This projected level is slightly higher than the forecast published in the May 1983 Outlook because reported nuclear generation data for the second quarter of 1983 was higher than expected. While the average capacity factor for the first half of 1983 is lower than recent levels, there are not sufficient data to indicate a permanent decrease. Two new plants (St. Lucie 2 and McGuire 2) began operating during the first half of 1983 and it is assumed that an additional two plants (San Onofre 3 and Grand Gulf 1) will be operating by year end. These capacity additions projected for 1983 are equivalent to 7 percent of the total U.S. nuclear capacity operating at the end of 1982. In addition, four plants (LaSalle 1, San Onofre 2, Susquehanna 1, and Summer 1) that began operating in the last half of 1982 contribute to the increase in 1983. The 8.4-percent increase in nuclear generation projected from 1983 to 1984 is based on the assumed operation of six new reactors: Diablo Canyon 1, Three Mile Island 1 (restart), Waterford 3, Palo Verde 1, LaSalle 2, and Shoreham. The capacity of these six plants equals over 9 percent of the total capacity expected to be operating at the end of 1983.

Hydroelectric generation is almost certainly headed for a record-breaking year forecasted at about 322 billion kilowatt-hours, a level 4.0 percent above the previous record set in 1982 and 15.4 percent above normal levels. Data for the first half of 1983 show hydroelectric generation 7.2 percent above the same period a year earlier.

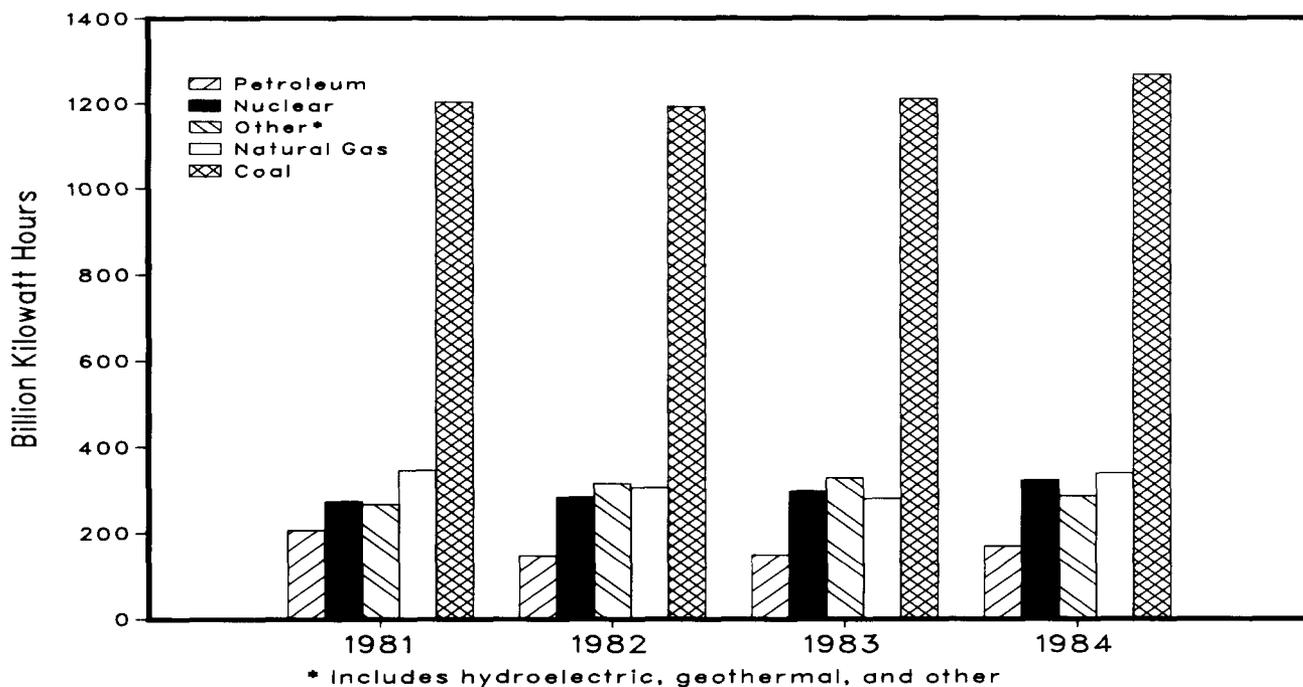


Figure 7. Electricity Generation by Fuel Source

It is expected that significant displacement of coal will occur in 1983 because of the higher hydroelectric generation, followed by smaller displacements of natural gas and oil. The displacement of natural gas by hydroelectricity in 1983 lowers natural gas use by electric utilities relative to the level forecast for 1984. The primary reason, however, for the 1983-84 increase in natural gas use by electric utilities is the role of natural gas as a swing fuel in a year of rapid growth in electricity demand.

Coal-fired generation dropped by nearly 1 percent from 1981 to 1982 and is expected to increase by only 1.5 percent from 1982 to 1983. Electricity generation from coal has not been increasing as rapidly as previously projected because hydroelectric generation has been so high and because total electricity demand growth has not increased. The rate of increase in coal-fired generation is forecast to be 4.7 percent from 1983 to 1984 as the demand for electricity increases. Using lower assumed rates of growth in the economy and the resulting demand for electricity, coal-fired generation may be 1,247 billion kilowatt-hours in 1984, only a 3-percent increase over the 1983 level.

Combined generation from oil and natural gas in 1982 dropped over 18 percent from the 1981 level as a result of increased shares of generation from coal and nuclear power, increased availability of inexpensive hydroelectricity, and decreased electricity demand. However, between 1983 and 1984, the resurgence in demand and the assumption of normal weather conditions lead to an increase in oil and gas

generation of 79 billion kilowatt-hours. The sensitivity of electricity generation in 1984 to different assumptions about economic growth is shown below: the impact of changes in electricity demand falls mainly on coal and petroleum, with some fuel switching away from natural gas in the high-growth case in response to the lower assumed world oil price.

1984 Forecast	Low Economic Growth Case	Base Case	High Economic Growth Case
	(billion kilowatt-hours)		
Generation			
Coal	1,247	1,267	1,278
Petroleum	150	169	214
Total Generation	2,342	2,381	2,402
Total Consumption (sales)	2,188	2,224	2,244

Total Domestic Energy Balance

Total U.S. energy consumption in 1983 is expected to be 70.2 quadrillion Btu, about the same level as in 1982 (see Table 18). In 1984, total energy consumption is projected to increase for the first time since 1979, reaching 73.8 quadrillion Btu (see Figure 8). The projected 5.1-percent increase in consumption from 1983 to 1984 is contingent on real GNP increasing by 4.8 percent and a return to normal weather after the winter of 1983, which was 7 percent warmer than normal.

With consumption forecast to grow faster than GNP from 1983 to 1984, the energy/GNP ratio is projected to increase slightly for the first time since 1970. The energy intensity of U.S. economic activity is first projected to fall to 45,980 Btu per 1972 dollar in 1983, then rise slightly to 46,220 Btu per 1972 dollar in 1984. The assumed return to normal weather in 1984 is a major factor in the projected interruption of the 13-year trend of declining energy/GNP ratios.

The consumption of each major energy source, except hydroelectricity, is projected to increase from 1983 to 1984. Hydroelectric generation is projected to decline significantly, largely due to the assumed return to normal weather in 1984 after 2 very wet years which led to record-breaking production in 1982 and 1983. Nuclear fuel's share of total energy consumption is projected to increase to 4.8 percent in 1984 (from 4.6 percent in 1983 and 4.3 percent in 1982), while hydroelectricity's share is projected to decline to 4.3 percent in 1984 (from 5 percent in 1983 and 4.6 percent in 1982). In the fossil fuel group, natural gas's share is projected to increase to 25.2 percent in 1984 (from 25.0 percent in 1983 and 25.8 percent in 1982), and coal's share is projected to remain essentially flat at about 22 percent. Oil's share is also projected to remain constant (at 43.0 percent) over the 1982-84 period.

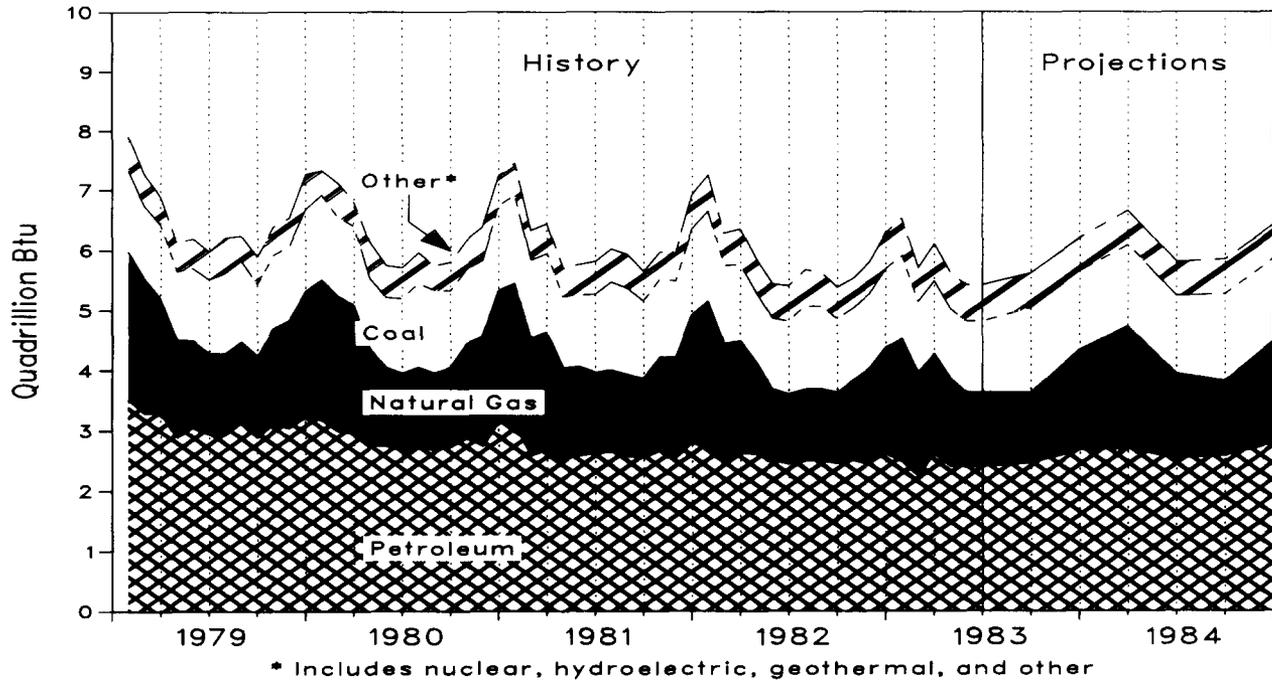


Figure 8. Gross Energy Consumption by Source

At the consuming sector level, utility fuel use is projected to change relatively little over the 1982-83 period, and then to increase by 5.5 percent in 1984. Nonutility fuel consumption, by contrast, is first projected to decline by 1.8 percent from 1982 to 1983 and then increase by 4.8 percent from 1983 to 1984. (It should be noted that electrical transmission and distribution losses are not included in the total energy consumption figures shown in Table 18. These losses are included in the total consumption figures in the Energy Information Administration's Monthly Energy Review.)

U.S. energy production is projected to decline by 3.8 percent from 1982 to 1983, and then increase by 2.9 percent from 1983 to 1984. The projected 1983 declines in the production of natural gas and coal are a response to lower domestic demand and a significant loss of coal export markets. With the projected 1983 to 1984 increases in demand for these fuels, production also increases. However, oil production is expected to decline slightly in 1984. Net imports of energy are projected to increase by over 30 percent from 1983 to 1984 to provide 14.7 percent of the total U.S. energy supplies.

Table 4. Short-Term Energy Prices (Nominal), History and Projections

Product	History					Projections								
	1982			1983		1984								
	3rd	4th	Year	1st	2nd	Price	3rd	4th	Year	1st	2nd	3rd	4th	Year
Petroleum														
Gasoline ¹ (cents per gallon)	130.8	126.4	128.1	117.3	123.4	Low 125.8 Base 126.8 High 127.0	119.0	124.7	123.1	125.6	113.7	123.5	108.0	112.2
No. 2 Heating oil, Wholesale ² (cents per gallon)	91.7	95.1	92.0	82.5	84.0	Low 80.6 Base 82.3 High 82.7	76.1	83.7	80.8	82.7	72.5	83.0	73.2	72.8
NO. 2 Heating Oil, Retail (cents per gallon)	115.6	120.3	118.6	110.3	104.0	Low 104.2 Base 105.8 High 106.2	100.2	107.2	104.7	106.9	95.5	109.3	97.4	96.3
No. 6 Residual Fuel Oil ³ (dollars per barrel)	28.73	29.20	29.08	26.25	26.15	Low 26.34 Base 26.93 High 27.08	25.45	27.82	26.05	27.72	23.73	27.39	24.52	24.12
Kerosene-Based Jet Fuel (cents per gallon)	95.3	95.9	96.9	92.6	88.2	Low 86.5 Base 87.4 High 87.6	82.5	86.8	87.5	86.6	75.8	86.5	74.6	75.9
Other														
Coal, Delivered to Utilities (cents per million Btu)	165.0	164.4	164.7	167.5	167.9	Low 164.9 Base 169.6 High 175.2	167.2	171.5	166.9	173.4	171.9	177.9	176.5	173.0
Natural Gas, Residential (cents per 1,000 cu. ft.)	566.0	603.7	552.6	615.6	654.3	Low 644.8 Base 658.6 High 670.4	645.0	664.8	639.9	659.1	663.9	722.4	676.6	663.4
Natural Gas, to Utilities (cents per million btu)	350.0	355.8	340.6	337.9	343.5	Low 369.0 Base 376.6 High 384.1	380.3	392.1	357.7	409.8	400.8	426.7	402.5	399.5
Electricity, Residential (cents per kilowatt-hour)	7.19	6.95	6.86	6.77	7.20	Low 7.10 Base 7.55 High 8.02	6.71	7.15	6.95	7.17	6.75	7.77	7.49	7.36

¹Average for all grades and services.

²Wholesale No. 2 heating oil prices through 1982 are from the Monthly Petroleum Product Price Report.

³Retail residual fuel oil--average, all sulfur contents.

Note: Second quarter 1983 estimated for No. 2 heating oil, wholesale; No. 6 residual fuel; kerosene-based jet fuel; coal; natural gas; and electricity.

ATTENTION: The low prices are used with the high economic growth assumptions and the high prices are used with the low economic growth assumptions referred to in Table 3.

Sources: Historical data: Energy Information Administration, Monthly Energy Review, DOE/EIA-0035(83/08), and Petroleum Marketing Monthly, DOE/EIA-0380(83/07) and Monthly Petroleum Product Price Report, DOE/EIA-0032(82/13).

Table 5. International Petroleum Balance
(Million Barrels per Day, Except Closing Stocks)

	History		Projections									
	1982	1983				1984						
	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year	
Supply ^a												
Production												
U.S. (50 States)	10.8	10.8	10.7	10.7	10.8	10.8	10.7	10.7	10.6	10.6	10.7	
OPEC	19.7	16.2	17.4	19.1	20.9	18.4	21.4	21.2	21.8	22.3	21.7	
Other Non-OPEC	12.2	12.6	12.8	13.0	13.3	12.9	13.0	13.2	13.5	13.5	13.3	
Total Non-Communist World	42.7	39.6	40.9	42.8	45.0	42.1	45.1	45.1	45.9	46.4	45.6	
Net Communist Exports	1.5	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Total Supply	44.2	41.2	42.4	44.3	46.5	43.6	46.6	46.6	47.4	47.9	47.1	
Net Stock Additions												
U.S. (50 States excl. SPR)	-0.3	-1.2	0.1	0.4	-0.2	-0.2	-0.3	0.2	1.0	-0.3	0.1	
U.S. SPR	0.2	0.2	0.2	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	
Other Non-Communist	-1.3	-3.5	-1.7	-0.2	-0.8	-1.6	-1.5	1.3	1.2	-0.6	0.1	
Total Stock Additions	-1.4	-4.5	-1.4	0.5	-0.9	-1.6	-1.7	1.6	2.3	-0.8	0.3	
Normal Seasonal Stock Addition ...	0.0	-3.3	1.8	2.4	-1.1	0.0	-3.3	1.8	2.4	-1.1	0.0	
Product Supplied												
U.S. (50 States)	15.3	15.0	14.8	14.9	16.0	15.2	16.3	15.4	15.5	16.7	16.0	
U.S. Territories	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
Japan	4.5	4.9	3.9	3.9	4.4	4.3	4.8	4.0	4.1	4.7	4.4	
OECD Europe	12.1	12.3	11.3	11.2	13.0	12.0	13.3	11.6	11.4	13.1	12.3	
Other Non-Communist World	13.4	13.1	13.4	13.4	13.6	13.4	13.5	13.6	13.7	13.8	13.7	
Total Non-Communist World	45.6	45.7	43.8	43.8	47.4	45.2	48.3	45.0	45.1	48.7	46.8	
Closing Stocks (billion barrels)	4.8	4.4	4.3	4.3	4.2	4.2	4.1	4.2	4.4	4.3	4.3	

^aIncludes production of crude oil and natural gas liquids, other hydrogen and hydrocarbons for refinery feedstock, refinery gains, and net exports from Communist countries.

Note: Minor discrepancies with other published EIA historical data are due to rounding.

Sources: Energy Information Administration, Monthly Energy Review, DOE/EIA 0035(83/08) and 1981 International Energy Annual (DOE/EIA-0219(81)); Organization for Economic Cooperation and Development, Quarterly Oil Statistics, First Quarter 1983; and Petroleum Economics Limited's Quarterly Supply/Demand Outlook, January 1983.

Table 7. Quarterly Supply and Disposition of Petroleum: Base Case
(Million Barrels per Day, Except Stocks)

	1982				1983				1984				
	History				Projections				Projections				
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply Production													
Crude Oil	8.66	8.66	8.65	8.66	8.68	8.66	8.63	8.66	8.61	8.56	8.50	8.48	8.54
North Slope	1.83	1.61	1.82	1.64	1.64	1.84	1.64	1.64	1.67	1.65	1.64	1.65	1.65
Subarctic	7.04	7.05	7.03	7.01	7.04	7.01	6.99	7.01	6.94	6.91	6.86	6.83	6.88
Natural Gas Liquids	1.52	1.59	1.55	1.60	1.50	1.53	1.54	1.54	1.55	1.54	1.55	1.56	1.55
Other Domestic	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.05	0.05	0.06	0.06	0.05
Processing Gain	0.53	0.58	0.53	0.47	0.48	0.50	0.52	0.49	0.51	0.51	0.53	0.52	0.52
Total Production	10.77	10.88	10.78	10.77	10.72	10.74	10.75	10.75	10.71	10.66	10.63	10.61	10.66
Imports (including SPR)													
Crude Oil	3.91	3.51	3.49	2.49	3.30	3.98	4.22	3.50	4.12	4.07	5.00	4.66	4.47
Refined Products	1.60	1.71	1.62	1.42	1.66	1.68	1.82	1.64	2.08	1.76	1.85	2.01	1.92
Total Imports	5.52	5.21	5.11	3.90	4.95	5.66	6.04	5.15	6.20	5.83	6.84	6.67	6.39
Exports													
Crude Oil	0.24	0.24	0.24	0.18	0.17	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Refined Products	0.56	0.62	0.58	0.70	0.64	0.63	0.61	0.64	0.64	0.66	0.66	0.65	0.65
Total Exports	0.80	0.86	0.82	0.88	0.81	0.81	0.79	0.82	0.82	0.84	0.84	0.83	0.83
Net Imports (incl SPR)	4.72	4.35	4.30	3.02	4.14	4.86	5.25	4.32	5.38	4.99	6.00	5.84	5.55
Primary Stock Levels ² (million barrels)													
Opening	1096.03	1136.08	1253.31	1168.20	1063.61	1076.77	1112.79	1168.20	1096.11	1067.96	1081.27	1170.67	1096.11
Closing	1136.08	1136.10	1136.10	1063.61	1076.77	1112.79	1096.11	1096.11	1067.96	1081.27	1170.67	1139.28	1139.28
Net Withdrawals (million barrels per day)	-0.44	-0.00	0.32	1.16	-0.14	-0.39	0.18	0.20	0.31	-0.15	-0.97	0.34	-0.12
SPR fill Rate Additions(-) (million barrels per day)	-0.15	-0.17	-0.17	-0.20	-0.23	-0.32	-0.14	-0.22	-0.14	-0.14	-0.14	-0.14	-0.14
Total Primary Supply	14.91	15.06	15.23	14.75	14.49	14.89	16.03	15.05	16.26	15.36	15.52	16.65	15.95
Product Supplied													
Motor Gasoline	6.65	6.50	6.54	6.29	6.68	6.78	6.61	6.59	6.34	6.66	6.77	6.59	6.59
Distillate Fuel Oil	2.26	2.64	2.67	2.83	2.52	2.10	3.01	2.62	3.39	2.59	2.33	3.24	2.89
Residual Fuel Oil	1.52	1.56	1.72	1.57	1.33	1.38	1.67	1.49	1.84	1.56	1.54	1.80	1.69
Other Products ³	4.47	4.42	4.37	4.32	4.23	4.63	4.74	4.48	4.69	4.54	4.87	5.02	4.78
Total Product Supplied	14.89	15.12	15.30	15.02	14.77	14.89	16.03	15.18	16.26	15.36	15.52	16.65	15.95
Unaccounted for	0.01	-0.06	-0.07	-0.27	-0.27	0.00	0.00	-0.13	0.00	0.00	0.00	0.00	0.00
Total Disposition	14.91	15.06	15.23	14.75	14.49	14.89	16.03	15.05	16.26	15.36	15.52	16.65	15.95

SPR = Strategic Petroleum Reserve.

¹Lower-48 States and southern Alaska.

²Excludes crude oil for the Strategic Petroleum Reserve (SPR). The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 32 million barrels to total petroleum stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)

³Includes Reclassified Petroleum Products.

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual DOE/EIA-340(83/06), and Petroleum Supply Monthly DOE/EIA-0109(83/07). Data for June 1983 are preliminary.

Table 8. Quarterly Supply and Disposition of Petroleum: High Economic Growth Case
(Million Barrels per Day, Except Stocks)

	History					Projections							
	1982			1983		1983			1984			1984	
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Production													
Crude Oil	8.66	8.66	8.65	8.66	8.68	8.66	8.63	8.66	8.61	8.56	8.50	8.48	8.54
North Slope	1.63	1.61	1.62	1.64	1.64	1.64	1.64	1.64	1.67	1.65	1.64	1.65	1.65
Subarctic ¹	7.04	7.05	7.03	7.01	7.04	7.01	6.99	7.01	6.94	6.91	6.86	6.83	6.88
Natural Gas Liquids	1.52	1.59	1.55	1.60	1.50	1.53	1.54	1.54	1.55	1.54	1.55	1.56	1.55
Other Domestic	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.05	0.05	0.06	0.06	0.05
Processing Gain	0.53	0.58	0.53	0.47	0.48	0.51	0.52	0.50	0.51	0.51	0.53	0.52	0.52
Total Production	10.77	10.88	10.78	10.77	10.72	10.75	10.75	10.75	10.71	10.66	10.63	10.61	10.66
Imports (including SPR)													
Crude Oil	3.91	3.51	3.49	2.49	3.30	4.15	4.39	3.59	4.13	4.37	4.77	4.76	4.51
Refined Products	1.60	1.71	1.62	1.42	1.66	1.66	1.83	1.64	2.18	2.29	2.11	2.24	2.21
Total Imports	5.52	5.21	5.11	3.90	4.95	5.81	6.22	5.23	6.31	6.66	6.88	7.01	6.71
Exports													
Crude Oil	0.24	0.24	0.24	0.18	0.17	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Refined Products	0.56	0.62	0.58	0.70	0.64	0.63	0.61	0.64	0.59	0.61	0.52	0.51	0.56
Total Exports	0.80	0.86	0.82	0.88	0.81	0.81	0.79	0.82	0.77	0.79	0.70	0.69	0.74
Net Imports (incl SPR)	4.72	4.35	4.30	3.02	4.14	5.01	5.43	4.41	5.54	5.87	6.18	6.32	5.98
Primary Stock Levels² (million barrels)													
Opening	1096.03	1136.08	1253.31	1168.20	1063.61	1076.77	1119.98	1168.20	1098.84	1044.72	1071.55	1100.64	1098.84
Closing	1136.08	1136.10	1136.10	1063.61	1076.77	1119.98	1098.84	1098.84	1044.72	1071.55	1100.64	1030.57	1030.57
Net Withdrawals	-0.44	-0.00	0.32	1.16	-0.14	-0.47	0.23	0.19	0.59	-0.29	-0.32	0.76	0.19
(million barrels per day)													
SPR Fill Rate Additions(-) ..	-0.15	-0.17	-0.17	-0.20	-0.23	-0.32	-0.14	-0.22	-0.14	-0.14	-0.14	-0.14	-0.14
(million barrels per day)													
Total Primary Supply	14.91	15.06	15.23	14.75	14.49	14.97	16.26	15.13	16.70	16.09	16.35	17.55	16.67
Product Supplied													
Motor Gasoline	6.65	6.50	6.54	6.29	6.68	6.78	6.64	6.60	6.42	6.79	6.92	6.74	6.72
Distillate Fuel Oil	2.26	2.64	2.67	2.83	2.52	2.12	3.09	2.64	3.53	2.77	2.54	3.48	3.08
Residual Fuel Oil	1.52	1.56	1.72	1.57	1.33	1.43	1.73	1.52	1.98	1.86	1.84	2.09	1.94
Other Products ³	4.47	4.42	4.37	4.32	4.23	4.64	4.79	4.50	4.78	4.67	5.06	5.23	4.94
Total Product Supplied	14.89	15.12	15.30	15.02	14.77	14.97	16.26	15.26	16.70	16.09	16.35	17.55	16.67
Unaccounted for	0.01	-0.06	-0.07	-0.27	-0.27	0.00	0.00	-0.13	0.00	0.00	0.00	0.00	0.00
Total Disposition	14.91	15.06	15.23	14.75	14.49	14.97	16.26	15.13	16.70	16.09	16.35	17.55	16.67

SPR = Strategic Petroleum Reserve.

¹Lower-48 States and southern Alaska.

²Excludes crude oil for the Strategic Petroleum Reserve (SPR). The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 32 million barrels to total petroleum stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)

³Includes Reclassified Petroleum Products.

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual DOE/EIA-340(83/06), and Petroleum Supply Monthly DOE/EIA-0109(83/07). Data for June 1983 are preliminary.

Table 9. Quarterly Supply and Disposition of Petroleum: Low Economic Growth Case
(Million Barrels per Day, Except Stocks)

	History						Projections						
	1982			1983			1984						
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Production													
Crude Oil	8.66	8.66	8.65	8.66	8.68	8.66	8.63	8.66	8.61	8.56	8.50	8.48	8.54
North Slope	1.63	1.61	1.62	1.64	1.64	1.64	1.64	1.64	1.67	1.65	1.64	1.65	1.65
Subarctic ¹	7.04	7.05	7.03	7.01	7.04	7.01	6.99	7.01	6.94	6.91	6.86	6.83	6.88
Natural Gas Liquids	1.52	1.59	1.55	1.60	1.50	1.53	1.54	1.54	1.55	1.54	1.55	1.56	1.55
Other Domestic	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.05	0.05	0.06	0.06	0.05
Processing Gain	0.53	0.58	0.53	0.47	0.48	0.50	0.52	0.49	0.50	0.50	0.47	0.52	0.50
Total Production	10.77	10.88	10.78	10.77	10.72	10.75	10.75	10.75	10.71	10.65	10.58	10.61	10.64
Imports (including SPR)													
Crude Oil	3.91	3.51	3.49	2.49	3.30	4.00	4.32	3.53	3.99	3.69	3.27	4.71	3.92
Refined Products	1.60	1.71	1.62	1.42	1.66	1.69	1.82	1.65	1.86	1.68	1.56	1.73	1.71
Total Imports	5.52	5.21	5.11	3.90	4.95	5.69	6.14	5.18	5.85	5.36	4.83	6.44	5.62
Exports													
Crude Oil	0.24	0.24	0.24	0.18	0.17	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Refined Products	0.56	0.62	0.58	0.70	0.64	0.63	0.61	0.64	0.64	0.66	0.66	0.65	0.65
Total Exports	0.80	0.86	0.82	0.88	0.81	0.81	0.79	0.82	0.82	0.84	0.84	0.83	0.83
Net Imports (incl SPR)	4.72	4.35	4.30	3.02	4.14	4.88	5.35	4.36	5.03	4.52	3.99	5.61	4.79
Primary Stock Levels² (million barrels)													
Opening	1096.03	1136.08	1253.31	1168.20	1063.61	1076.77	1113.36	1168.20	1098.69	1048.25	1064.46	1039.89	1098.69
Closing	1136.08	1136.10	1136.10	1063.61	1076.77	1113.36	1098.69	1098.69	1048.25	1064.46	1039.89	1078.62	1078.62
Net Withdrawals	-0.44	-0.00	0.32	1.16	-0.14	-0.40	0.16	0.19	0.55	-0.18	0.27	-0.42	0.05
(million barrels per day)													
SPR Fill Rate Additions(-) ..	-0.15	-0.17	-0.17	-0.20	-0.23	-0.32	-0.14	-0.22	-0.14	-0.14	-0.14	-0.14	-0.14
(million barrels per day)													
Total Primary Supply	14.91	15.06	15.23	14.75	14.49	14.91	16.11	15.08	16.15	14.85	14.69	15.66	15.33
Product Supplied													
Motor Gasoline	6.65	6.50	6.54	6.29	6.68	6.79	6.64	6.60	6.33	6.57	6.60	6.38	6.47
Distillate Fuel Oil	2.26	2.64	2.67	2.83	2.52	2.12	3.04	2.63	3.35	2.44	2.06	2.91	2.69
Residual Fuel Oil	1.52	1.56	1.72	1.57	1.33	1.34	1.64	1.47	1.78	1.42	1.38	1.60	1.55
Other Products ³	4.47	4.42	4.37	4.32	4.23	4.66	4.79	4.50	4.69	4.42	4.65	4.76	4.63
Total Product Supplied	14.89	15.12	15.30	15.02	14.77	14.91	16.11	15.20	16.15	14.85	14.69	15.66	15.33
Unaccounted for	0.01	-0.06	-0.07	-0.27	-0.27	0.00	0.00	-0.12	0.00	0.00	0.00	0.00	0.00
Total Disposition	14.91	15.06	15.23	14.75	14.49	14.91	16.11	15.08	16.15	14.85	14.69	15.66	15.33

SPR = Strategic Petroleum Reserve.

¹Lower-48 States and southern Alaska.

²Excludes crude oil for the Strategic Petroleum Reserve (SPR). The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 32 million barrels to total petroleum stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 *Petroleum Supply Monthly*.)

³Includes Reclassified Petroleum Products.

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, 1982 *Petroleum Supply Annual* DOE/EIA-340(83/06), and *Petroleum Supply Monthly* DOE/EIA-0109(83/07). Data for June 1983 are preliminary.

Table 10. Petroleum Demand: Sensitivity Differentials
(Million Barrels per Day)

Sensitivities	1983			1st	2nd	1984		
	3rd	4th	Year			3rd	4th	Year
Demand in 50 States								
Low Price	14.96	16.22	15.25	16.62	15.94	16.12	17.27	16.48
Base Case	14.89	16.03	15.18	16.26	15.36	15.52	16.65	15.95
High Price	14.83	15.92	15.13	16.12	15.15	15.31	16.39	15.74
Weather Sensitivity								
Adverse Weather	0.15	0.19	0.08	0.28	0.09	0.15	0.19	0.18
Favorable Weather	-0.15	-0.19	-0.08	-0.28	-0.09	-0.15	-0.19	-0.18
Economic Sensitivity								
High Economic Activity	0.01	0.04	0.01	0.08	0.15	0.23	0.28	0.19
Low Economic Activity	-0.08	-0.19	-0.07	-0.03	-0.30	-0.62	-0.73	-0.41
Combined Sensitivity Differentials								
Upper Range	0.15	0.19	0.08	0.29	0.17	0.27	0.34	0.26
Lower Range	0.17	0.27	0.11	0.28	0.31	0.64	0.75	0.45
Range of Projected Demand								
High Demand ^a	15.11	16.41	15.33	16.91	16.11	16.39	17.61	16.74
Low Demand ^b	14.66	15.65	15.02	15.84	14.84	14.67	15.64	15.29

^aLow Price demand plus the combined effects of adverse weather and high economic activity.

^bHigh Price demand less the combined effects of favorable weather and low economic activity.

Table 11. Petroleum Inventories^a

Unit of Measure	End of 1979	End of 1980 ^b	End of 1981	End of 1982 ^c	Mid-1983	Base Case Projections		
						End of 1983	Mid-1984	End of 1984
Million Barrels	1,250	1,284	1,253	1,136	1,077	1,096	1,081	1,139
Days' Supply ^d	67.5	75.3	78.0	74.2	72.0	72.2	69.1	71.4

^aEnd-of-year primary stocks (excluding Strategic Petroleum Reserve).

^bBecause of changes in EIA reporting in January 1981, inventory data since 1980 include approximately 34 million barrels of petroleum stocks (primarily Alaskan crude oil in transit by water) that was not counted before. (See Table 31 and Explanatory Notes, 1981 Petroleum Supply Annual DOE/EIA-340(81/1).)

^cThe respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 33 million barrels to total petroleum stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the Petroleum Supply Monthly DOE/EIA-109(83/03).)

^dInventory level divided by the previous year's figure for product supplied.

Note: Minor discrepancies with published EIA historical data are due to rounding.

Note: Due to the different basis for petroleum inventories, the pre-1981 days' supply measure is not comparable to subsequent days' supply measures. Using the old basis, the 1981 statistic would have been 75.9 days' supply. Due to the second revision of the reporting basis for petroleum inventories, pre-1983 days' supply measures are not comparable to subsequent days' supply measures. Using the old basis, the 1983 statistic would have been 70.0 days' supply.

Source: Historical data: Energy Information Administration, Petroleum Supply Monthly, DOE/EIA-0109(83/07).

Table 12. Quarterly Supply and Disposition of Motor Gasoline: Base Case
(Million Barrels per Day, Except Stocks)

	History						Projections						
	1982			1983			1984						
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Domestic Production ¹	6.57	6.36	6.34	5.92	6.41	6.57	6.58	6.37	6.30	6.37	6.55	6.45	6.42
Imports	0.25	0.19	0.20	0.17	0.27	0.23	0.20	0.22	0.19	0.21	0.21	0.20	0.20
Exports	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02
Net Imports	0.23	0.18	0.18	0.16	0.27	0.21	0.19	0.21	0.17	0.19	0.19	0.18	0.18
Primary Stocks of Finished Motor Gasolines² (million barrels)													
Opening	177.14	191.10	203.47	202.54	183.71	183.32	184.53	202.54	199.21	210.59	200.64	197.98	199.21
Closing	191.10	194.50	194.50	183.71	183.32	184.53	199.21	199.21	210.59	200.64	197.98	202.71	202.71
Net Withdrawals	-0.15	-0.04	0.02	0.21	0.00	-0.01	-0.16	0.01	-0.13	0.11	0.03	-0.05	-0.01
(million barrels per day)													
Total Primary Supply	6.65	6.50	6.54	6.29	6.68	6.78	6.61	6.59	6.34	6.66	6.77	6.59	6.59
Disposition													
Leaded	3.15	3.08	3.13	2.88	3.07	2.97	2.83	2.93	2.66	2.74	2.73	2.61	2.69
Unleaded	3.50	3.43	3.41	3.41	3.62	3.81	3.78	3.66	3.68	3.92	4.04	3.98	3.91
Total Product Supplied	6.65	6.50	6.54	6.29	6.68	6.78	6.61	6.59	6.34	6.66	6.77	6.59	6.59
Unaccounted for	-0.00	-0.00	-0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Disposition	6.65	6.50	6.54	6.29	6.68	6.78	6.61	6.59	6.34	6.66	6.77	6.59	6.59

¹Refinery production plus production at natural gas processing plants.

²Includes stocks at natural gas processing plants. Excludes stocks of reclassified motor gasoline blending components. The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 8 million barrels to total motor gasoline stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual DOE/EIA-340(83/06), and Petroleum Supply Monthly, DOE/EIA-0109(83/07). Data for June 1983 are preliminary.

Table 13. Quarterly Supply and Disposition of Distillate Fuel Oil: Base Case
(Million Barrels per Day, Except Stocks)

	History						Projections						
	1982			1983			1983			1984			
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Refinery Output	2.63	2.78	2.61	2.15	2.39	2.44	2.94	2.48	2.84	2.55	2.99	3.07	2.86
Imports	0.09	0.11	0.09	0.05	0.13	0.22	0.13	0.13	0.16	0.13	0.16	0.13	0.14
Exports	0.07	0.08	0.07	0.11	0.05	0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.06
Net Imports	0.02	0.04	0.02	-0.06	0.08	0.16	0.07	0.06	0.10	0.07	0.10	0.07	0.08
Primary Stock Levels¹ (million barrels)													
Opening	123.69	161.20	191.54	185.58	118.72	113.80	160.20	185.58	160.01	119.07	121.47	191.45	160.01
Closing	161.20	178.59	178.59	118.72	113.80	160.20	160.01	160.01	119.07	121.47	191.45	182.27	182.27
Net Withdrawals	-0.41	-0.19	0.04	0.74	0.05	-0.50	0.00	0.07	0.45	-0.03	-0.76	0.10	-0.06
(million barrels per day)													
Total Primary Supply	2.25	2.63	2.66	2.83	2.52	2.10	3.01	2.62	3.39	2.59	2.33	3.24	2.89
Product Supplied													
Nonutility Shipments	2.23	2.62	2.64	2.80	2.51	2.05	2.96	2.58	3.32	2.55	2.28	3.20	2.84
Electric Utility Shipments	0.03	0.02	0.03	0.03	0.01	0.05	0.05	0.04	0.07	0.04	0.05	0.05	0.05
Total Product Supplied	2.26	2.64	2.67	2.83	2.52	2.10	3.01	2.62	3.39	2.59	2.33	3.24	2.89
Electric Utility Consumption	0.04	0.03	0.04	0.03	0.03	0.06	0.05	0.04	0.07	0.05	0.06	0.05	0.06
Electric Utility Stock Levels (million barrels)													
Opening	24.65	24.22	26.09	23.37	23.20	21.43	21.07	23.37	20.39	20.16	19.69	19.34	20.39
Closing	24.22	23.37	23.37	23.20	21.43	21.07	20.39	20.39	20.16	19.69	19.34	18.64	18.64
Net Additions	-0.00	-0.01	-0.01	-0.00	-0.02	-0.00	-0.01	-0.01	-0.00	-0.01	-0.00	-0.01	-0.00
(million barrels per day)													
Electric Utility Discrepancy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unaccounted for	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Disposition	2.25	2.63	2.66	2.83	2.52	2.10	3.01	2.62	3.39	2.59	2.33	3.24	2.89

¹The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 7 million barrels to total distillate fuel oil stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual DOE/EIA-340(83/06), the Petroleum Supply Monthly DOE/EIA-0109(83/07), the Monthly Energy Review DOE/EIA-0026(83/08), the Electric Power Monthly DOE/EIA-0026(83/06). Data for June 1983 are preliminary.

Table 14. Quarterly Supply and Disposition of Residual Fuel Oil: Base Case
(Million Barrels per Day, Except Stocks)

	History				Projections							
	1982		1983		1984		1984					
	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	Year	
Supply												
Refinery Output	1.00	0.98	1.07	0.88	0.90	1.08	0.94	1.05	1.12	0.95	1.05	1.04
Imports	0.69	0.79	0.78	0.67	0.71	0.85	0.74	0.90	0.74	0.90	0.98	0.88
Exports	0.21	0.20	0.21	0.22	0.24	0.23	0.23	0.24	0.24	0.24	0.24	0.24
Net Imports	0.48	0.59	0.57	0.45	0.47	0.62	0.51	0.66	0.50	0.66	0.74	0.64
Primary Stock Levels¹ (million barrels)												
Opening	60.67	61.82	77.99	68.23	46.31	50.45	66.23	53.78	41.93	47.01	53.40	53.78
Closing	61.82	66.20	66.20	46.31	50.08	53.78	53.78	41.93	47.01	53.40	53.10	53.10
Net Withdrawals	-0.01	-0.05	0.03	0.24	-0.04	-0.04	0.04	0.13	-0.06	-0.07	0.00	0.00
(million barrels per day)												
Total Primary Supply	1.47	1.52	1.67	1.57	1.33	1.67	1.49	1.84	1.56	1.54	1.80	1.69
Product Supplied												
Nonutility Shipments	0.90	1.06	1.09	1.04	0.81	0.92	0.88	1.15	0.92	0.80	0.98	0.96
Electric Utility Shipments	0.62	0.50	0.62	0.53	0.52	0.75	0.61	0.70	0.64	0.74	0.82	0.73
Total Product Supplied	1.52	1.56	1.72	1.57	1.33	1.67	1.49	1.84	1.56	1.54	1.80	1.69
Electric Utility Consumption	0.62	0.53	0.64	0.68	0.53	0.76	0.65	0.79	0.60	0.72	0.83	0.74
Electric Utility Stock Levels (million barrels)												
Opening	97.96	98.16	102.04	95.51	81.63	80.09	95.51	80.86	72.50	76.14	77.91	80.86
Closing	98.16	95.51	95.51	81.63	80.09	81.86	80.86	72.50	76.14	77.91	76.91	76.91
Net Additions	0.00	-0.03	-0.02	-0.15	-0.02	0.02	-0.04	-0.09	0.04	0.02	-0.01	-0.01
(million barrels per day)												
Electric Utility Discrepancy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unaccounted for	-0.05	-0.04	-0.05	0.00	0.00	0.00	0.00	-0.00	0.00	0.00	-0.00	0.00
Total Disposition	1.47	1.52	1.67	1.57	1.33	1.67	1.49	1.84	1.56	1.54	1.80	1.69

¹The respondent universe for petroleum inventories was expanded in January 1983. This resulted in the addition of 2 million barrels to total residual fuel oil stocks at the close of December 31, 1982. (See the Petroleum Supply Reporting System Overview and Table 30 in the March 1983 Petroleum Supply Monthly.)
 Note: Minor discrepancies with other EIA published historical data are due to rounding.
 Sources: Historical data: Energy Information Administration, 1982 Petroleum Supply Annual DOE/EIA-340(83/06), the Petroleum Supply Monthly DOE/EIA-0109(83/07), the Monthly Energy Review DOE/EIA-0026(83/08), the Electric Power Monthly DOE/EIA-0026(83/06). Data for June 1983 are preliminary.

Table 15. Quarterly Supply and Disposition of Natural Gas
(Trillion Cubic Feet)

	History						Projections						
	1982			1983			1984						
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Marketed Production of Dry Gas ¹	4.22	4.21	17.55	4.09	3.83	4.05	4.31	16.28	4.40	4.32	4.30	4.38	17.41
Net Imports of Dry Gas	0.18	0.25	0.88	0.27	0.16	0.15	0.23	0.81	0.25	0.18	0.18	0.24	0.85
Net Imports of LNG	-0.00	0.01	0.01	0.03	0.02	0.02	0.02	0.09	0.02	0.02	0.02	0.02	0.07
SNG Production	0.02	0.03	0.12	0.03	0.01	0.02	0.03	0.10	0.04	0.02	0.02	0.03	0.12
Total New Supply	4.42	4.50	18.55	4.42	4.03	4.24	4.59	17.29	4.71	4.54	4.52	4.67	18.45
Underground Storage													
Opening	6.15	7.03	6.57	6.88	5.96	6.26	7.10	6.88	6.83	5.65	6.11	7.04	6.83
Closing	7.03	6.88	6.88	5.96	6.26	7.10	6.83	6.83	5.65	6.11	7.04	6.75	6.75
Net Withdrawals	-0.89	0.15	-0.31	0.92	-0.30	-0.85	0.27	0.05	1.18	-0.46	-0.93	0.29	0.08
Total Primary Supply ¹	3.53	4.65	18.24	5.34	3.74	3.40	4.86	17.34	5.89	4.08	3.59	4.96	18.53
Consumption													
Electric Utilities	1.01	0.71	3.23	0.59	0.67	0.91	0.80	2.97	0.90	0.94	1.00	0.76	3.60
Refinery Fuel	0.14	0.16	0.59	0.14	0.16	0.17	0.17	0.64	0.16	0.17	0.17	0.17	0.68
All Other Uses ²	2.29	3.68	14.02	4.52	2.82	2.24	3.80	13.38	4.73	2.88	2.32	3.94	13.87
Subtotal	3.43	4.55	17.84	5.25	3.64	3.31	4.77	16.98	5.80	3.99	3.50	4.87	18.16
Unaccounted for	0.10	0.10	0.41	0.09	0.09	0.09	0.09	0.36	0.09	0.09	0.09	0.09	0.36
Total Disposition	3.53	4.65	18.24	5.34	3.74	3.40	4.86	17.34	5.89	4.08	3.59	4.96	18.53

LNG=Liquefied Natural Gas.

SNG=Synthetic Natural Gas.

¹Excludes nonhydrocarbon gases removed.

²Includes residential, commercial, and industrial uses plus use of synthetic natural gas.

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Sources: Historical data: Energy Information Administration, Monthly Energy Review DOE/EIA-0026(83/08), Natural Gas Monthly DOE/EIA-0130(83/07), and Electric Power Monthly DOE/EIA-0026(83/06).

Table 16. Quarterly Supply and Disposition of Coal
(Million Short Tons)

	History				Projections								
	1982				1984								
	3rd	4th	Year	1st	2nd	3rd	4th	Year					
Supply													
Production	200.18	196.35	833.41	191.05	186.11 ²	190.11	201.88	769.15	194.10	202.98	202.75	213.48	813.32
Primary Stock Levels ¹													
Opening	36.88	39.68	24.15	36.78	39.25	38.21	34.30	36.78	36.63	38.55	40.17	24.20	36.63
Closing	39.68	36.78	36.78	39.25	38.21	34.30	36.63	36.63	38.55	40.17	24.20	25.05	25.05
Net Withdrawals	-2.80	2.89	-12.63	-2.47	1.04	3.91	-2.33	0.15	-1.92	-1.62	15.97	-0.85	11.58
Imports	0.27	0.23	0.74	0.27	0.37	0.25	0.25	1.14	0.25	0.25	0.25	0.25	1.00
Exports	25.25	23.84	106.28	15.14	20.35	19.02	21.02	75.53	15.48	20.47	19.45	21.28	76.68
Total New Domestic Supply ...	172.40	175.63	715.24	173.71	167.18	175.25	178.78	694.91	176.95	181.14	199.52	191.60	749.22
Secondary Stock Levels ³													
Opening	198.38	189.97	185.27	195.25	191.53	197.50	178.83	195.25	179.43	170.65	174.61	175.22	179.43
Closing	189.97	195.25	195.25	191.53	197.50	178.83	179.43	179.43	170.65	174.61	175.22	179.88	179.88
Net Withdrawals	8.41	-5.29	-9.98	3.72	-5.97	18.66	-0.60	15.82	8.79	-3.96	-0.61	-4.66	-0.44
Total Indicated Consumption	180.61	170.34	705.26	177.43	161.21	193.91	178.18	710.73	185.74	177.18	198.91	186.94	748.78
Domestic Consumption													
Coke Plants	9.10	8.04	40.91	8.12	10.78	12.37	13.87	45.14	12.89	12.76	12.79	13.55	51.99
Electric Utilities	158.50	145.04	593.66	146.16	139.64	166.26	145.32	597.39	152.86	147.55	169.96	153.58	623.95
Retail and General Industry ...	16.49	18.99	72.33	18.77	15.71	15.28	18.98	68.74	19.99	16.88	16.16	19.81	72.83
Total Domestic Consumption ..	184.09	172.07	706.90	173.05	166.14	193.91	178.18	711.28	185.74	177.18	198.91	186.94	748.78
Discrepancy ⁴	-3.28	-1.73	-1.65	4.38	-4.93	-0.00	-0.00	-0.55	-0.00	-0.00	-0.00	-0.00	-0.00

¹Primary stocks are those held at the mines, preparation plants, and distribution points.

²Estimated.

³Secondary stocks are those held by users. Most of the secondary stocks are held by electric utilities.

⁴Historical period discrepancy reflects unaccounted for shipper and receiver reporting discrepancies.

Note: Rows and columns may not add due to independent rounding.

Sources: Historical data: Energy Information Administration, Monthly Energy Review DOE/EIA-0035(83/08), Quarterly Coal Report DOE/EIA-0121(83/1Q).

Table 17. Quarterly Supply and Disposition of Electricity
(Billion Kilowatt-Hours)

	History						Projections						
	1982			1983			1984						
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Generation													
Coal	317.64	290.29	1192.00	296.45	280.92	337.69	295.17	1210.24	310.48	299.68	345.21	311.95	1267.32
Petroleum	35.50	30.44	146.80	38.02	30.52	36.37	43.55	148.46	45.46	34.39	41.66	47.21	168.73
Natural Gas	95.41	67.23	305.26	56.06	62.71	85.54	74.88	279.20	84.43	88.40	94.11	71.40	338.35
Nuclear	75.84	70.86	282.77	71.19	68.57	80.74	76.00	296.50	78.15	73.74	87.08	82.53	321.50
Hydroelectric	71.08	70.81	309.21	87.57	91.87	72.94	69.31	321.69	72.37	76.10	65.45	64.84	278.77
Geothermal and Other ¹	1.43	1.44	5.16	1.36	1.24	1.63	1.65	5.88	1.58	1.53	1.75	1.76	6.62
Total Generation	596.90	531.06	2241.21	550.66	535.84	614.92	560.55	2261.97	592.48	573.85	635.26	579.70	2381.28
Total Net Imports	7.99	7.99	31.67	7.80	7.25	5.95	5.95	26.95	6.15	6.14	5.95	5.95	24.19
T & D Loss ²	45.30	36.89	154.97	30.17	39.94	40.58	37.00	147.69	39.10	37.87	41.93	38.26	157.16
Total Consumption (Sales) ..	551.60	494.17	2086.24	520.48	495.90	574.34	523.56	2114.28	553.37	535.97	593.33	541.44	2224.11

¹Includes wood and waste.

²Transmission and distribution losses through the power network, calculated as total generation minus total sales.

Note: Minor discrepancies with other EIA published historical data are due to rounding.

Source: Historical Data: Energy Information Administration, Monthly Energy Review DOE/EIA-0035(83/08), and Electric Power Monthly DOE/EIA-0226(83/06).

Table 18. Quarterly Supply and Disposition of Total Energy
(Quadrillion Btu)

	History						Projections						
	1982			1983			1984			1984			
	3rd	4th	Year	1st	2nd	3rd	4th	Year	1st	2nd	3rd	4th	Year
Supply													
Production													
Petroleum ¹	5.17	5.20	20.53	5.08	5.12	5.17	5.16	20.54	5.10	5.07	5.10	5.09	20.35
Natural Gas ²	4.33	4.32	18.03	4.20	3.93	4.16	4.43	16.72	4.52	4.44	4.42	4.50	17.88
Coal	4.48	4.39	18.65	4.28	4.17	4.25	4.52	17.21	4.34	4.54	4.54	4.78	18.20
Nuclear	0.83	0.77	3.08	0.78	0.75	0.88	0.83	3.23	0.85	0.80	0.95	0.90	3.51
Hydroelectric ³	0.75	0.74	3.25	0.92	0.96	0.77	0.73	3.38	0.76	0.80	0.69	0.68	2.93
Geothermal and Other ⁴	0.03	0.03	0.11	0.03	0.03	0.04	0.04	0.13	0.03	0.03	0.04	0.04	0.14
Subtotal	15.59	15.46	63.66	15.29	14.96	15.27	15.70	61.21	15.61	15.69	15.73	15.98	63.01
Net Imports													
Crude Oil	1.97	1.75	6.90	1.21	1.65	2.04	2.16	7.06	2.09	2.06	2.58	2.40	9.13
Other Petroleum	0.53	0.55	2.12	0.35	0.51	0.53	0.60	2.00	0.71	0.54	0.59	0.68	2.52
Natural Gas (Dry)	0.19	0.25	0.89	0.27	0.17	0.16	0.23	0.82	0.25	0.18	0.18	0.24	0.86
Liquefied Natural Gas	-0.00	0.01	0.01	0.03	0.03	0.02	0.02	0.10	0.02	0.02	0.02	0.02	0.08
Coal and Coke	-0.66	-0.62	-2.79	-0.39	-0.53	-0.49	-0.54	-1.95	-0.40	-0.53	-0.50	-0.55	-1.97
Electricity	0.08	0.08	0.33	0.08	0.08	0.06	0.06	0.28	0.06	0.06	0.06	0.06	0.25
Subtotal	2.10	2.03	7.46	1.55	1.91	2.31	2.53	8.30	2.74	2.34	2.93	2.85	10.86
Primary Stocks													
Net Withdrawals	-1.20	0.19	-0.01	1.30	-0.31	-0.97	0.29	0.30	1.32	-0.56	-1.11	0.42	0.07
SPR Fill Rate Additions(-)	-0.08	-0.09	-0.37	-0.10	-0.12	-0.17	-0.08	-0.47	-0.08	-0.08	-0.08	-0.08	-0.31
Utility Stocks ⁵													
Net Withdrawals	0.18	-0.09	-0.15	0.18	-0.11	0.38	-0.01	0.44	0.25	-0.10	-0.03	-0.09	0.02
Total Supply ⁶	16.59	17.50	70.59	18.21	16.32	16.81	18.44	69.78	19.85	17.28	17.44	19.08	73.66
Consumption													
Nonutility Uses													
Petroleum	7.08	7.26	28.85	7.03	7.03	7.03	7.58	28.67	7.64	7.24	7.31	7.86	30.07
Natural Gas ⁵	2.48	3.93	14.96	4.77	3.05	2.47	4.07	14.36	5.01	3.13	2.55	4.21	14.89
Coal	0.63	0.67	2.87	0.67	0.66	0.69	0.82	2.84	0.82	0.74	0.73	0.84	3.13
Subtotal	10.19	11.86	46.69	12.47	10.74	10.19	12.47	45.87	13.47	11.11	10.59	12.91	48.09
Electric Utility Inputs													
Petroleum	0.38	0.33	1.57	0.40	0.33	0.39	0.47	1.59	0.49	0.37	0.45	0.51	1.82
Natural Gas	1.04	0.74	3.34	0.61	0.69	0.94	0.82	3.07	0.93	0.97	1.04	0.79	3.72
Coal	3.34	3.06	12.52	3.08	2.94	3.55	3.10	12.68	3.26	3.15	3.63	3.28	13.31
Nuclear	0.83	0.77	3.08	0.78	0.75	0.88	0.83	3.23	0.85	0.80	0.95	0.90	3.51
Hydroelectric ⁹	0.83	0.83	3.58	1.00	1.04	0.83	0.79	3.66	0.83	0.86	0.75	0.74	3.18
Geothermal and Other	0.03	0.03	0.11	0.03	0.03	0.04	0.04	0.13	0.03	0.03	0.04	0.04	0.14
Subtotal	6.45	5.75	24.19	5.91	5.78	6.63	6.05	24.36	6.40	6.19	6.85	6.25	25.69
Gross Energy Consumption ⁶	16.65	17.61	70.89	18.38	16.51	16.82	18.52	70.23	19.87	17.31	17.44	19.16	73.78
Electric Utility Adjustments													
Conversion Loss ⁷	4.38	3.91	16.43	4.00	3.92	4.51	4.11	16.54	4.35	4.21	4.66	4.25	17.47
Total Net Energy	12.26	13.70	54.46	14.38	12.59	12.31	14.41	53.69	15.52	13.10	12.78	14.91	56.31
Unaccounted for	-0.05	-0.11	-0.30	-0.17	-0.20	-0.01	-0.08	-0.45	-0.02	-0.03	0.00	-0.08	-0.12
Total Disposition	16.59	17.50	70.59	18.21	16.32	16.81	18.44	69.78	19.85	17.28	17.44	19.08	73.66

SPR = Strategic Petroleum Reserve.

¹Includes crude oil and lease condensate; natural gas liquids; hydrogen, etc., input to oil refineries.

²Dry marketed natural gas excluding nonhydrocarbon gases removed.

³Includes industrial production.

⁴Includes wood and waste used to generate electricity.

⁵Includes natural gas used as refinery fuel.

⁶Includes all secondary coal stocks.

⁷Includes plant use.

⁸This total excludes approximately 2 quadrillion Btu of wood.

⁹Includes industrial hydroelectric production and net imports of electricity.

Note: The conversion from physical units to Btu is calculated by STIFS using a subset of Monthly Energy Review conversion factors. Consequently, the historical data will not precisely match that published in the Monthly Energy Review. In addition, minor discrepancies with EIA published historical data are due to rounding.

Source: Energy Information Administration, Monthly Energy Review DOE/EIA-0035(83/08), and Electric Power Monthly DOE/EIA-0226(83/06).

See note above.

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Forecast Conversion Factors Used in STIFS

Most of the conversion factors used by the Short-Term Integrated Forecasting System (STIFS) are the 1982-1983 EIA standard conversion factors (found on the last page of the Monthly Energy Review). Special factors used in STIFS are derived from data in the Monthly Energy Review or from energy data reports such as the Petroleum Supply Monthly.

Product Identification	Unit	Btu/Unit
A. Thermal Content of Fuels and Energy		
Crude Oil Production	barrel	5,800,000
Crude Oil Import	"	5,818,000
Unfinished Oils	"	5,825,000
Total Petroleum Consumed	"	5,448,000
Total Petroleum Imports	"	5,775,000
Total Petroleum Exports	"	5,821,000
Motor Gasoline	"	5,253,000
Jet Fuel	"	5,615,000
Distillate Fuel Oil	"	5,825,000
Refinery Fuel (Liquids)	"	5,850,000
All Refinery Inputs	"	5,773,000
Residual Fuel Oil	"	6,287,000
LPG's and LRG's	"	3,643,000
Ethane	"	3,082,000
Hydrogen, etc. to Refineries	"	3,500,000
Natural Gas Liquids (Production)	"	3,930,000
Natural Gas Consumption (dry)	cubic foot	1,027
Natural Gas Imports	"	1,014
Natural Gas Exports	"	1,011
Synthetic Gas Production	"	1,000
Natural Gas Refinery Fuel	"	1,021
Bituminous Coal & Lignite Consumed	short ton	21,800,000
Coal to Electric Utilities	"	21,090,000
Coal Consumption, Excl. Utilities	"	24,960,000
Bituminous Coal and Lignite Prod.	"	22,380,000
Coking Coal	"	24,960,000
General Ind. and Retail Coal	"	24,960,000
Coke	"	26,000,000
Bituminous Coal and Lignite Exports	"	26,180,000
Bituminous Coal and Lignite Imports	"	25,000,000
B. Efficiency of Conversion Processes		
1. Electric Power Generation		
Fuel or Power Source:		Btu/KWh (heat rate)
Coal		10,506
Crude Oil		10,724
Distillate Fuel Oil		13,501
Residual Fuel Oil		10,649
Geothermal and Other Energy		21,594
Nuclear Energy		10,908
Natural Gas		10,927
Hydropower		10,388
2. Other Conversion Processes		
		Btu Out/Btu In
Coke		0.68
Synthetic Gas		0.95

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